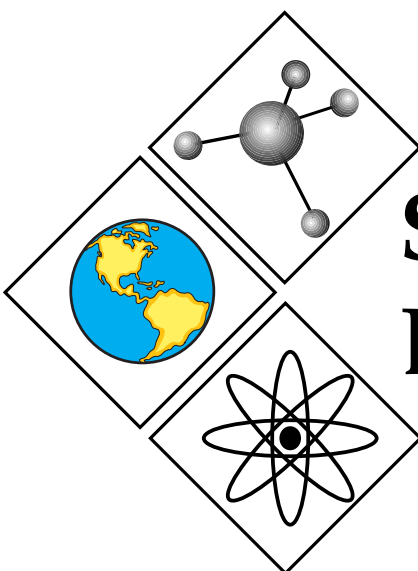


Department of Energy

FY 1999 Congressional Budget Request



Science, Technology & Energy for the Future

Budget Highlights and Performance Plan



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Budget Highlights

The FY 1999 Budget Request for the U.S. Department of Energy

Introduction

The Department of Energy serves the nation by providing innovative science and technology solutions to some of the foremost energy, environmental, national security, and scientific challenges facing America's future. This budget proposes investments to provide America with the technical and scientific infrastructure needed to ensure: a safer world; enhanced energy security; a cleaner environment; and a strong economy, into the next century.

In FY 1999, the Department of Energy budget request totals \$18.0 billion, an increase of about \$1.5 billion, or nine percent, over the FY 1998 appropriated level. The major changes from the FY 1998 appropriation proposed in FY 1999 are:

+\$338 million	❖	to emphasize energy R&D in energy efficiency and renewable energy, fossil energy, and nuclear energy;
+\$246 million	❖	to advance the nation's scientific capabilities;
+\$421 million	❖	to fully support the Comprehensive Test Ban Treaty and address the threat of nuclear proliferation;
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+\$1,005 million		<i>in core program increases</i>
+\$160 million	❖	to support the operation of the Strategic Petroleum Reserve without relying on oil sales from the reserve;
+\$317 million	❖	to continue innovative environmental cleanup activities through Privatization;
-\$8 million	❖	other net change;
<hr/>		
+\$1,474 million		<i>total increase to DOE programs in FY 1999</i>

This request also emphasizes acceleration and completion of our activities. In the Environmental Management program, \$1.0 billion is proposed in FY 1999 to continue a pilot begun in 1997, to accelerate closure of the Rocky Flats, Fernald and Mound sites. The total Environmental Management FY 1999 budget request of \$6.1 billion, is now organized by "projects" and their expected time frame for completion or closure. The objective is to complete cleanup at more sites to reduce maintenance costs in the future, thereby allowing the Department to focus its resources on more actual cleanup. The FY 1999 request also assumes that as program objectives are accomplished, the Department will discontinue the activity. For example, this budget assumes the sale of the Elk Hills Naval Petroleum Reserve which is estimated to bring in \$3.6 billion—the largest sale of a government asset ever negotiated on behalf of American taxpayers.

Science, Technology and Energy For Our Future

Upon arriving at the Department of Energy in March 1997, Secretary Federico Peña recognized that the Department's involvement in breakthrough science and technology was not well-known to most Americans. The truth is, the Department of Energy is a science and technology agency because our missions and goals require technologies and knowledge far beyond that which is currently available. Each of DOE's mission areas relies on cutting edge science and technology to achieve its objectives: whether it is our national security mission, to ensure that our nuclear deterrent remains safe, secure and reliable; or our energy mission to achieve continued reductions in the economic and environmental costs of producing and using energy resources; or our environmental cleanup mission.

The Department of Energy, through its extensive system of National Laboratories and partnerships with industries, academia and other R&D performers, plays a major role in our nation's R&D system. The DOE National Labs employ nearly 30,000 scientific and technical personnel. DOE will spend a total of \$6.5 billion in R&D in FY 1998 and plans to spend \$7.2 billion in FY 1999. DOE is among the top five Federal R&D funding agencies regardless of the criterion used: total R&D, basic research, applied research, development, or academic research. And DOE usually ranks first in the construction of major scientific facilities.

The excellence of the science and technology programs DOE supports can be seen in the recognition our Labs and scientists receive. For example, to date, Department of Energy supported scientists have won more than 71 Nobel prizes. In fact, in 1995, 4 of the 5 Nobel recipients in physics and chemistry had been supported by DOE, as well as 3 of the Nobel recipients in 1996. In 1997, with 36 awards, the Department was also the largest winner of R&D 100 Award—awarded annually by R&D Magazine for the 100 annual advancements in science and technology most likely to benefit society. Also in 1997, DOE scientists won 3 of the 7 top honors awarded by *DISCOVER* magazine for technological innovation.

Department of Energy scientists are helping solve problems important to the American people—in national security, energy, health and the environment. This capability will be of critical importance to our nation as we prepare for the challenges before us in the century ahead. The Department's FY 1999 budget request increases funding for basic research and its applications, in direct recognition of DOE's strength as a science and technology agency.

An important influence on this request has been the November, 1997, report of the President's Committee of Advisors on Science and Technology (PCAST)—*Federal Energy Research and Development for the Challenges of the 21st Century*. This report, along with several other reviews of DOE's energy R&D programs, have enabled the Department to evaluate its R&D priorities to prepare America for the challenges of the next century.

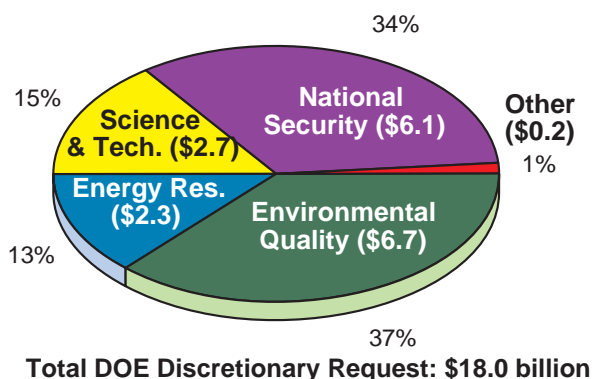
The FY 1999 request incorporates the results of this ongoing evaluation and proposes investments that better leverage the Department's capabilities in science and technology for the greatest national benefit. The emphasis in FY 1999 is on programs whose high potential payoffs for society as a whole justify larger R&D investments than industry would be likely to make on the basis of expected private returns and where modest government investments can effectively complement, leverage, or catalyze work in the private sector.

FY 1999 — Investments for America's Future

As in previous years, the Department's FY 1999 request is organized into four primary lines of business: energy resources, national security, environmental quality, and science and technology to serve DOE's core mission statement:

“To foster a secure and reliable energy system that is environmentally and economically sustainable, to be a responsible steward of the Nation’s nuclear weapons, to clean up our own facilities, and to support continued United States leadership in science and technology.”

Total Request by Business Line



The Department has established five key goals that drive all the strategic planning and budgeting decisions in the development of the FY 1999 budget request:

- ◆ Develop and promote clean, efficient energy technologies and enhance energy security;
- ◆ Reduce the global nuclear danger;
- ◆ Restore, stabilize, protect, and enhance the environment.
- ◆ Leverage the Department’s unique science and technology capabilities to provide knowledge that drives the Nation’s future;
- ◆ Stimulate U.S. economic productivity.

Energy Resources: Secure Supplies of Clean, Affordable, Energy

Energy Resources — An Emphasis on Energy R&D

Helping guard against energy supply disruptions and their associated threats to the United States remains a fundamental priority of the Department of Energy. To achieve these goals, the Department continues its pursuit of energy technology development. Our energy technology program recognizes the need to maximize energy productivity, strengthen and improve living standards, prevent pollution and reduce the adverse environmental impacts associated with energy production, delivery and use. The report of the President’s Committee of Advisors on Science and Technology (PCAST) reads:

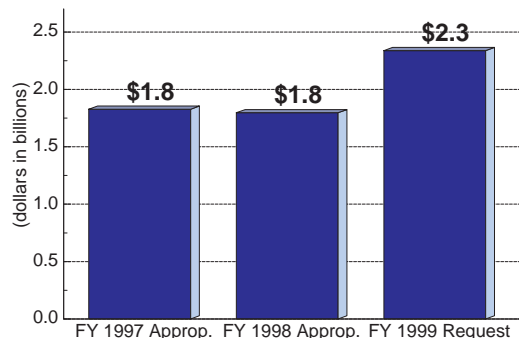
“this country’s economic prosperity, environmental quality, national security, and world leadership in science and technology all require improving our energy technologies, and an enhanced national R&D effort is needed to provide these improvements.”

In response to this recommendation, the Department proposes a total energy resources investment of \$2,338 million in FY 1999, a 30 percent increase over the FY 1998

appropriation. This includes the total of all programs within the Department’s Energy Efficiency and Renewable Energy, Fossil Energy, Power Marketing, and Energy Information Administration programs, as well as the non-defense portion of the Nuclear Energy program. These increases are in line with the recommendations of the PCAST report which identified the need to bolster energy R&D funding particularly in light of a drop in the Department’s energy R&D programs by nearly \$1.0 billion since FY 1992 (\$2.2 billion in FY 1992 versus \$1.3 billion in FY 1997).

Within the proposed FY 1999 total request for energy R&D, the Administration has identified \$330.0 million as part of the President’s Climate Change Technology Initiative (CCTI) to

Energy Resources Funding



demonstrate the Administration's commitment to the reduction of carbon emissions. However, the reduction of carbon emissions is but one of many societal benefits of DOE's proposed FY 1999 energy R&D investment. Expenditures on energy account for about 8 percent of the gross economic product of the United States. And, as stated in the PCAST report, experience has shown that periods of excessive energy costs are associated with inflation, recession, and frustrated economic aspirations. It is also true that global sales of new energy technologies run in the hundreds of billions of dollars per year.

The PCAST report also states that energy production and consumption account for a large share of the most worrisome environmental problems at every geographic scale—from wood-smoke in Third World village huts, to regional smog and acid precipitation in industrialized and developing countries alike, to the risk of widespread radioactive contamination from accidents at nuclear energy facilities, to the build-up of carbon dioxide and other heat-trapping gasses in the global atmosphere.

The report sites the link of national security to energy through the increasing dependence of this country and the world oil market on imported oil, much of it from the politically troubled Middle East; through the danger that nuclear-weapons-relevant knowledge and materials will be transferred from civilian nuclear energy programs into national nuclear arsenals or terrorist bombs; and through the potential for large-scale failures of energy strategy with economic or environmental consequences serious enough to generate or aggravate social and political instability.

It is now generally agreed among forecasters that global demand for oil, mainly from developing nations, will grow by 25-35 percent over the next 15 years. According to the Department of Energy's independent Energy Information Administration (EIA), the world will need another 25 million barrels of oil a day by the year 2010. The International Energy Agency projects an even greater growth in demand, following the inexorable tide of population growth, urbanization, and industrialization.

The Department's FY 1999 request for energy R&D technologies was formulated within this context of the projected world energy market and the challenges that lie ahead in the next century. Energy efficiency and renewable energy programs are an important part of the Department's strategy to meet these energy objectives. The PCAST report indicates that

"improvements in energy efficiency reduced the energy intensity of economic activity in the U.S. by nearly one-third between 1975 and 1995, an improvement that is now saving U.S. consumers about \$170 billion per year in energy expenditures and is keeping U.S. emissions of air pollutants and carbon dioxide about a third lower than they would otherwise be."

In FY 1999, the Department requests a total of \$1,146 million for Energy Efficiency and Renewable Energy programs, a net increase of \$282 million. Within this increase, \$261 million is identified as part of the President's Climate Change Technology Initiative to demonstrate the Administration's commitment to the reduction of greenhouse gas and other emissions. These programs support deployment partnerships and collaborations with the private sector to address key technology and market barriers, and promote U.S. energy technology leadership in domestic and international markets.

The increase for energy efficiency and renewable energy also includes \$36.0 million for the President's Partnership for a New Generation of Vehicles to develop prototype vehicles without compromises in safety, performance, or affordability and twice the fuel economy; and \$22.9 million to support Industries of the Future partnerships to create technology roadmaps for energy intensive industries to save energy, improve productivity and reduce waste.

The budget request for the Fossil Energy program recognizes that nearly 85 percent of the nation's energy is currently supplied by coal, oil and natural gas—world-wide, fossil fuels supply 75 percent of total energy demand. Meanwhile, our oil imports are steadily increasing. With the contribution of these fuels projected to increase in coming years, the Department's Fossil Energy program focuses its funding primarily on ways to ensure continued environmental protection and enhance our domestic oil security.

As part of the FY 1999 emphasis on energy science and technology, the request proposes \$10 million for activities relating to carbon sequestration, that hold the promise of significant reductions of greenhouse gas concentrations. Carbon sequestration research will evaluate long-term options to capture and dispose of greenhouse gas emissions and to eventually stabilize the atmospheric concentration of greenhouse gases.

The FY 1999 request also emphasizes research and development of new natural gas and coal-fired electric power technologies to significantly reduce emissions. The FY 1999 budget moves into the final phases of development for several advanced electric power technologies, including low emission boilers, advanced generation fuel cells and ultra-high efficiency gas turbines, culminating a decade or more and several hundred million dollars of prior public and private sector investment. DOE's support for these 21st century technologies is becoming increasingly important as the U.S. electric and natural gas industries, confronted by the uncertainties of restructuring, continue to cut back financing of longer-range, higher-risk R&D, while at the same time demand for new and cleaner sources of electricity rapidly increases throughout the world.

The Fossil Energy FY 1999 budget also supports several efforts to ensure greater domestic oil security, particularly in light of rising imports. To be able to respond to potential oil supply disruptions, the Administration will work with the Congress to maintain the current Strategic Petroleum Reserve inventory once the FY 1998 mandated sales are completed. For the longer-term, the budget continues research and development into new oil exploration, production and processing technologies that can lower costs and boost domestic oil supplies, particularly from properties owned by smaller independent producers. The budget also maintains research into alternatives to conventional petroleum, including technologies to produce high-quality liquid fuels from natural gas.

In FY 1999, the Department also proposes an emphasis on nuclear energy R&D. According to PCAST, nuclear fission currently generates about 17 percent of the world's electricity; if this electricity were generated instead by coal, world carbon dioxide emissions from fossil fuel consumption would be almost 10 percent larger than they currently are. A total of \$361 million is requested for Nuclear Energy Research and Development in FY 1999. This request supports a new initiative, the Nuclear Energy Research Initiative (NERI), to emphasize collaborative research among the universities, national laboratories, and industry. The program also supports the application of DOE-developed technologies to reduce the storage, transportation and repository costs of spent nuclear fuel in the U.S.

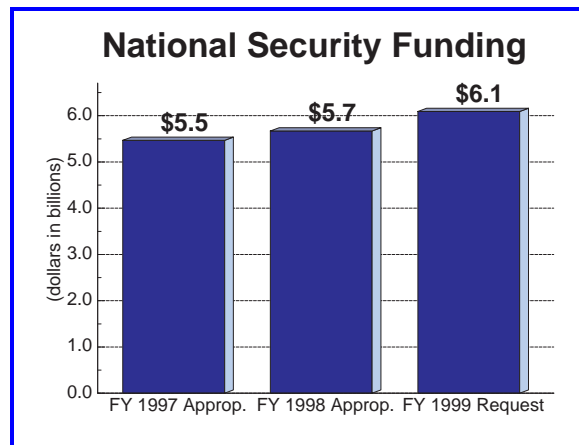
The Nuclear Energy Research and Development budget in FY 1999 also continues to focus on building and delivering advanced nuclear power systems to NASA and defense customers; maintaining an adequate supply of isotopes for medical and research purposes; supporting U.S. nuclear research, development and education; and providing technical support to ensure the safe operation of Soviet-designed nuclear reactors.

National Security: Reducing the Nuclear Danger

National Security — Investments for a Safe, Strong Future

The Department's defense laboratories and production facilities are the Nation's repository of nuclear weapons-related knowledge and manufacturing capability. This unique and irreplaceable resource helped win the Cold War and continues to ensure our national security.

The FY 1999 program request for National Security programs is \$6.1 billion¹, an increase of \$421 million from the FY 1998 enacted level. The growth in this area reflects our efforts to build the facilities and develop the necessary capabilities to meet our strategic national security objectives under a Comprehensive Test Ban Treaty. The Department's national security responsibilities are focused on maintaining the safety and reliability of our nuclear weapons, advancing our arms control and nonproliferation initiatives, and providing nuclear reactors for the U.S. Navy. DOE is an integral part of the U.S. national security community and plays an essential role by providing unique technical expertise in support of the Department of Defense, the State Department, and other agencies focused on reducing the global danger from nuclear weapons, other weapons of mass destruction, and improving international nuclear safety.



Over the past several years, United States national security policies have undergone profound change due to evolving geopolitical military realities of the post Cold War world. Reflecting these changes, DOE has shifted its priorities toward activities which advance the nation's nonproliferation and international nuclear safety policies while maintaining the safety and reliability of our nuclear weapons without nuclear testing. In FY 1999, a total of \$676 million is requested for Office of Nonproliferation and National Security programs, an increase of 3 percent.

The Department's Nonproliferation and National Security budget also includes a significant (\$210 million in FY 1999) R&D program to offer technological solutions to the fight the proliferation of weapons of mass destruction. Recently, the

Department has also expanded its activities to address the danger of chemical and biological weapons and nuclear smuggling. An example of the program's accomplishments is the development of the Radiation Pager that can be worn on the belt of U.S. Customs Service and law enforcement personnel to alert them to the presence of radioactive materials.

The Department of Energy is responsible for ensuring the safety and reliability of the nation's nuclear stockpile under a Comprehensive Test Ban Treaty. The Department's FY 1999 budget request proposes a total of \$4.5 billion for Defense Programs, an increase of \$357 million from FY 1998. A significant portion of this increase supports investments in science and technology that will play a critical role in support of the objectives of the Comprehensive Test Ban Treaty. The Department of Energy is embarking on an ambitious scientific challenge that relies on advancing the state of the art computer simulation capabilities to ensure, without nuclear testing, the readiness of the nuclear stockpile.

One component of this science-based approach is the National Ignition Facility (NIF), for which the Department proposes \$291 million in FY 1999. The National Ignition Facility will house a 192-beam laser, the world's largest. The NIF will create, for the first time ever in a

¹ The national security business line includes only a part of DOE's programs in the national defense budget function (050), which totals \$12,140 million in FY 1999.

lab, brief bursts of self-sustaining fusion reactions. These kinds of reactions power the sun and the stars, and will allow us to study nuclear weapons physics without conducting underground nuclear tests as we have in the past.

The NIF is also a good example of the way in which DOE's various missions interrelate and tie together through the application of science. Although the NIF is being built for national security reasons, there will be many other important benefits to the American people. The NIF also will advance our fundamental knowledge in basic science. In areas such as astrophysics, scientists will be able to create conditions of high temperature and density, like those within a star, to allow research previously unattainable in the laboratory.

With regard to computer simulation the President's decision to stop nuclear testing has required that the Department and its laboratories dramatically advance the state of the art in computer modeling to analyze the safety and reliability of the nation's nuclear stockpile. A key element of the response to this challenge is the Department's Accelerated Strategic Computing Initiative (ASCI), for which \$331 million is proposed in FY 1999. As part of ASCI, the Department is developing supercomputers that by 2004 will be 1500 times faster than the fastest available in 1996. In December 1996, DOE acquired a supercomputer capable of doing one trillion operations per second, a factor of three faster than the world's previous fastest computer. By 2004, we'll be able to do, in one day, problems that used to take four years to solve. This level of computing is essential to maintain the safety, security and performance of the stockpile in the absence of nuclear testing. This proposed expansion of current computing capability promises enormous economic and scientific benefits throughout American industry, academia and science.

In FY 1999, a total of \$169 million is requested for Fissile Materials Disposition to provide for the verifiable storage and disposition of U.S. weapons-usable fissile materials (highly enriched uranium and plutonium) and provide the technical basis to attain reciprocal actions for the disposition of surplus Russian plutonium. This request provides for continued development of immobilization and plutonium conversion technologies; the design of a Pit Disassembly and Conversion Facility required to convert classified surplus nuclear weapons pits to an oxide form suitable for disposition and international inspection; design of a Mixed Oxide Fuel (MOX) Fabrication Facility to put the plutonium oxide into a form suitable for burning in domestic, commercial reactors; and development of a pilot-scale plutonium conversion system in Russia to facilitate the disposition of Russian plutonium. Construction of the Plutonium disposition facilities in the United States will not take place unless there is significant progress on plans for plutonium disposition in Russia.

A total of \$45 million is requested for the Worker and Community Transition program, which seeks to mitigate the impact of work force restructuring due to defense mission changes and provides local impact assistance to affected communities. For Naval Reactors, a total of \$666 million is requested to continue provision of safe, reliable, and long-lived nuclear propulsion plants to the U.S. Navy.

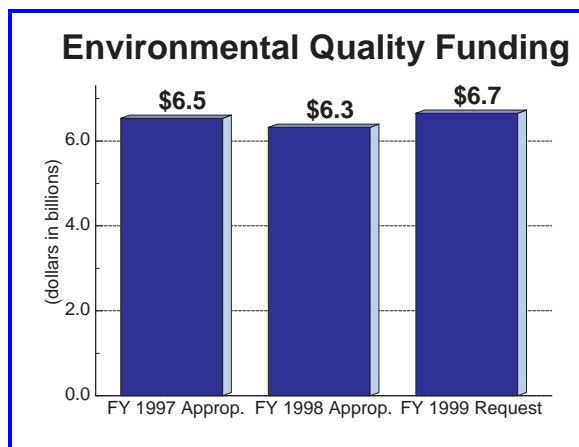
Environmental Quality: Accelerating Progress, Meeting Commitments

Environmental Quality — A Focus on Completion, Closure, and Cleanup

The Department is taking an aggressive approach to address the immediate and long-term environmental and health risks of the Department's former weapons production complex, and resolve the issues surrounding spent nuclear fuel storage.

In FY 1999, the Department is requesting \$6,654 million for Environmental Quality programs, a 5 percent increase from the FY 1998 level. This request marks a shift in focus toward the closure of sites and completion of projects with a targeted approach to cleanup. The FY 1999 request will enable the Department to address the highest human health, safety,

and environmental risks within the Department of Energy complex. This request will also enable the Department to continue its real progress toward an answer to some of the most critical questions in the area of long-term nuclear waste disposal.



The development of a nuclear waste repository is one of the Nation's most daunting technical challenges. Since the Department restructured its approach in 1996 in response to Congressional direction, the repository program has made notable progress. The efforts have focused on constructing facilities and collecting and analyzing data to resolve the remaining open technical issues regarding the suitability of the Yucca Mountain site. Now the Department is on the verge of answering this most basic question. A viability assessment of the Yucca Mountain system is scheduled to be completed in 1998. The \$380.0 million requested in FY 1999 for the Civilian Radioactive Waste Management program will support data synthesis and analysis, model validation, and refinement of engineering and designs necessary for major upcoming decision

documents: the Final Environmental Impact Statement and Record of Decision in 2000; the Site Recommendation to the President in 2001, if the site is found suitable; and the License Application to the Nuclear Regulatory Commission in 2002.

The FY 1999 budget request of \$150 million for programs within the Office of Environment, Safety, and Health continues the program's commitment to the Radiation Effects Research Foundation and proposes \$41.5 million for other Health Studies programs, including epidemiological studies and occupational medicine

The Department of Energy manages a legacy of 130 hazardous, radioactive, and mixed waste sites in over 30 States, covering over 3,300 square miles of contaminated area. Responsibility for the clean-up and restoration of these sites lies with DOE's Environmental Management program which must administer the requirements resulting from 103 compliance agreements and a multitude of federal, state, and local health and safety environmental statutes.

The FY 1999 Environmental Management budget request has five components: \$4,260 million for Defense Environmental Restoration and Waste Management, \$462 million for Non-Defense Environmental Restoration and Waste Management, \$277 million for the Uranium Enrichment Decontamination and Decommissioning Fund; and \$1,006 million for the Closure Fund and \$517 million for environmental management privatization. In August, 1997, Secretary Peña designated three sites—Rocky Flats, Fernald and Mound—as pilot sites for accelerated closures. By accelerating completion at targeted sites, we will be able to reduce long-term costs and focus resources saved on accelerating completion of environmental cleanup work at other sites.

The development of environmental cleanup technologies and the pursuit of related science is yet another way in which science ties together the Department's varying missions. The Department's Technology Development and Science programs total \$219.5 million in FY 1999. These programs are maturing and will soon generate significant cost savings and performance gains as they are applied to the hazardous, toxic and nuclear cleanup challenges of the Cold War legacy. The soon to be released 2006 cleanup plan identifies specific areas where the application of innovative technologies can accelerate cleanup accomplishments before 2006, and generate large cost savings. To maximize the potential of technology development and science to the Department's Environmental Management activities, the

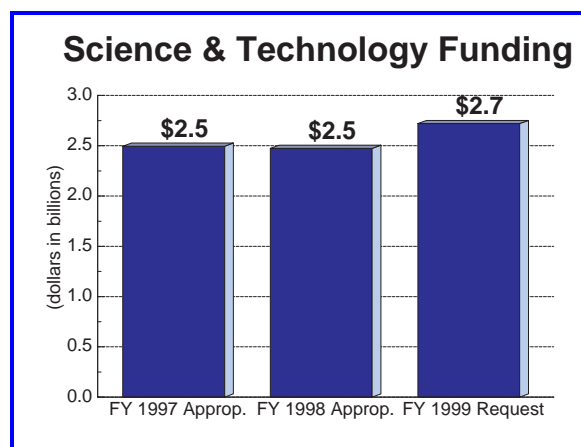
Department has established an independent oversight committee to review the entire technology development effort.

In FY 1999, \$516.9 million is proposed to continue the Department's Privatization Initiative begun in FY 1997 in pursuit of alternative financing mechanisms for several of the Department's large scale environmental cleanup design and construction activities. Under the privatization approach, many of the technical and performance risks are shifted to the private contractor, providing greater incentives to complete projects on time and within budget. This contracting approach also will bring private sector efficiencies, and new and improved technology to the Department's cleanup program.

Science & Technology: Ideas Creating Jobs, Products and Industries for Tomorrow

Science & Technology — Investing in Our National Scientific Infrastructure

DOE is one of the Nation's top supporters of fundamental science research across a broad range of disciplines, including physics, materials science, chemistry, nuclear medicine and structural biology. Advances in science and technology have provided the long-term basis for economic growth, job creation, and improving our quality of life. Recognizing the critical importance of cutting edge science to an increasingly competitive world economy, the Administration is proposing a ten percent increase for the Office of Energy Research in FY 1999, \$246.0 million over the FY 1998 appropriated level, for a total of \$2,720 million in FY 1999.



This increase will allow DOE to: initiate a critical addition to U.S. scientific capability in neutron science; continue participation in world scientific activities such as the Large Hadron Collider (LHC) and magnetic fusion; maintain the level of access to our scientific user facilities; and build upon a small but important program in science education.

The Department's FY 1999 proposed request for science activities recognizes the need to bolster America's capabilities in neutron science. Neutron science is a national research priority because of its importance to fundamental discoveries and practical benefits. Chemical companies use neutrons to make better fibers, plastics, and highly efficient and selective

catalysts; automobile manufacturers use the penetrating power of neutrons to understand how to cast and forge gears and brake discs to make cars run more efficiently and safely; airplane manufacturers use neutron radiography for nondestructive testing of defects in airplane wings, engines, and turbine blades; and drug companies use neutrons to design drugs with higher potency and fewer side effects. The U.S. currently lags far behind both Europe and Japan in neutron science, and their planned new neutron sources could increase their lead even further in materials science and related research.

The Administration proposes \$157.0 million to begin construction of the Spallation Neutron Source, a critical state-of-the-art neutron source which will provide power about six times that of the highest currently available worldwide. The design will allow for significantly higher power at a later stage. This facility will greatly expand current research capabilities in physical, chemical, materials, biological, and medical sciences.

Other investments in the national scientific infrastructure include a \$30.0 million increase to support U.S. participation in the Large Hadron Collider, bringing the total request to \$65.0 million in FY 1999. On December 8, 1997, Secretary Peña signed, on behalf of the U.S. government, an important agreement with the European Laboratory for Particle Physics, known as CERN, to support a state-of-the-art accelerator, the Large Hadron Collider. Other

nations that are not members of CERN—Japan, Canada, Russia, India and Israel—also have agreed to join this international scientific effort.

The U.S. investment, over eight years will total \$531 million, of which the Department will contribute \$450 million and the National Science Foundation will contribute \$81 million. The Large Hadron Collider will enable about 25 percent of the U.S. experimental high energy physics community to take advantage of the unique research capabilities of the Collider when it becomes operational in 2005. The Collider will accelerate protons up to speeds just a fraction under the speed of light and smash them together at higher energies than any machine has ever before achieved. The results of the collisions will allow physicists to study in unprecedented detail and precision the structure of matter, and to shed new light on some of the mysteries of the origin of the universe, as well as increase the understanding of the fundamental building blocks of matter.

The Department also supports fundamental research in the biological and environmental sciences allowing fundamental understanding of energy production and use. An exciting example of the work these programs support is the recent accomplishment of the complete genomic sequencing of several microbes of potentially great importance for the production of energy, improving the understanding of the effect of radiation on living cells, and the cleanup of radioactive wastes.

In August 1996, a research institute funded by the Department announced it had sequenced the genome of a “methane producing microbe” that lives 8,000 feet deep in ocean thermal vents at 250 atmospheres (a pressure that would collapse ordinary submarines as if made of papier mache) and close to the boiling point of water at sea level. This microbe lives without sunlight, without oxygen and without organic carbon, but it produces methane, and proteins that can bind heavy metals, which is why DOE is interested in it.

As a way to leverage the Department’s scientific resources for future generations, the Department’s FY 1999 budget request proposes a small, but important investment in science education that builds on educational initiatives already underway throughout the various programs. The advantages are clear—in 1997, Secretary Peña announced a partnership with the National Science Foundation to afford science teachers throughout the nation access to the latest scientific information, training and instruction from the Department’s nearly 30,000 scientists and engineers. In addition, the Secretary announced a partnership with the National Science Teachers Association to recruit 1,000 scientists, engineers, and technicians from the national laboratories and DOE’s facilities by the year 2000 to volunteer as on-line mentors. These mentors will answer teachers’ questions on: basic science and technology; energy use and efficiency; environmental studies; engineering; and computer science and math.

Our Continuing Commitment to Reengineering

The Department’s FY 1999 request maintains the commitment, made in 1995, to downsize DOE’s federal infrastructure and reengineer administrative functions. This budget is based on a federal staffing level at the end of FY 1999 of 10,613 (excluding FERC and the PMAs) — more than 2,900 people (22 percent) below its high point in May 1995.

Similarly, the Department will continue in FY 1999 to bring greater efficiency to its Management and Operating (M&O) contracts which are the primary mechanism through which the Department manages the day to day operations of its facilities in 35 states. Beginning in FY 1993, the Department began an effort to reduce the size of its M&O infrastructure consistent with the general downsizing of the agency. This budget reflects staff reductions in M&O contractors of approximately 43,000 (29 percent) since 1992.

The Department initiated its contract reform effort in 1994 to increase competition, move toward performance-based contracting, and improve practices to reduce the cost of operating the Department's facilities. Since 1994, the Department has competed eight M&O contracts. At least four additional contracts will be competed in the next two years. Comparatively, only six competitions were conducted in the previous 10 years prior to the initiative—three of which had to be competed because the incumbent contractor ended work with the Department. "Overhead" costs at 22 sites were reduced by more than \$600 million between 1994 and 1996.

In addition to its reform measures for M&O contracts, the Department has streamlined its procurement systems, reengineered acquisition processes, reduced lead times, and overhauled regulatory burdens. The budget also reflects the Department's efforts to generally reduce expenditures for support services. Since the initiation of the Strategic Alignment Initiative in 1995, the Department has reduced its obligations for support services by \$429 million, more than a one-third reduction in two years.

Moving Toward Performance-Based Budgeting

The Department's FY 1999 preliminary Performance Plan, which is included with these highlights, is submitted in accordance with the Government Performance and Results Act (GPRA). This law requires that federal budgets, beginning in FY 1999, be developed from a strategic planning process and contain performance-based results for proposed spending requests. The Performance Plan identifies specific measures of success which directly tie to the requested program levels.

The Department of Energy has been using strategic planning and performance-based budgeting since the beginning of the Clinton Administration, enabling this budget to begin implementation of the provisions of GPRA to manage federal taxpayer dollars more effectively. This budget was developed by linking the Department's strategic planning process to performance-based planning and budget proposals. Decisions on how best to invest taxpayer funds are based on which programs deliver the most beneficial results and accomplish the President's strategic objectives. The Department will continue to work with the Office of Management and Budget and the Congress to develop improved performance measures for the FY 2000 budget submission.

Detailed Budget Summary

The following sections, organized by appropriations, discuss in detail our proposed FY 1999 budget request which is a strong portfolio of investments for a better future. Up front, you will see both the funding request and the performance outcomes for the work proposed for funding in FY 1999. The FY 1999 budget request is prepared on a comparable basis. This means that the FY 1997 and FY 1998 amounts are adjusted to reflect the FY 1999 budget structure. The FY 1999 budget request and Performance Plan shown in the following pages implement our strategic objectives and provide the Congress and the American people with information on the real results we propose to achieve with this request.

Summary by Business Line

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Business Lines					
National Security					
Defense Programs	3,907,431	4,142,572	4,500,000	357,428	8.6%
Nonproliferation & National Security	627,295	657,137	676,300	19,163	2.9%
Fissile Materials Disposition	103,796	103,677	168,960	65,283	63.0%
Worker and Community Transition	62,500	61,148	45,000	-16,148	-26.4%
Nuclear Energy (050)	84,500	35,000	35,000	—	—
Naval Reactors	681,932	670,352	665,500	-4,852	-0.7%
Total, National Security	5,467,454	5,669,886	6,090,760	420,874	7.4%
Energy Resources					
Energy Efficiency & Renewable Energy	777,326	863,331	1,145,751	282,420	32.7%
Fossil Energy	485,390	366,903	560,728	193,825	52.8%
Nuclear Energy (non-defense)	276,472	269,535	325,750	56,215	20.9%
Power Marketing Administrations					
Alaska	4,000	13,500	—	-13,500	-100.0%
Southeastern	16,359	12,222	8,500	-3,722	-30.5%
Southwestern	25,210	25,210	26,000	790	3.1%
Western Area	186,004	194,635	215,435	20,800	10.7%
Falcon & Amistad operating & maint.	970	970	1,010	40	4.1%
Colorado river basin	-10,000	-16,098	-16,098	—	—
Total, Power Marketing Administrations	222,543	230,439	234,847	4,408	1.9%
Energy Information Administration	66,120	66,800	70,500	3,700	5.5%
Total, Energy Resources	1,827,851	1,797,008	2,337,576	540,568	30.1%
Science and Technology					
Energy Research	2,483,990	2,464,686	2,710,620	245,934	10.0%
Technical Information Management	11,737	10,032	9,840	-192	-1.9%
Total, Science and Technology	2,495,727	2,474,718	2,720,460	245,742	9.9%
Environmental Quality					
Environmental Management	5,995,493	5,818,593	6,123,912	305,319	5.2%
Civilian Radioactive Waste Management	382,000	345,696	380,000	34,304	9.9%
Environment, Safety & Health	157,082	157,497	150,000	-7,497	-4.8%
Total, Environmental Quality	6,534,575	6,321,786	6,653,912	332,126	5.3%
Total, Business Lines	16,325,607	16,263,398	17,802,708	1,539,310	9.5%
Other Programs	268,322	284,210	260,000	-24,210	-8.5%
Undistributed adjustments	-733	35,000	—	-35,000	-100.0%
Federal Energy Regulatory Commission	-46,049	-22,000	-28,060	-6,060	-27.5%
Total, Department of Energy	16,547,147	16,560,608	18,034,648	1,474,040	8.9%

Summary by Appropriation Account

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Energy and Water Development					
Energy supply	944,212	1,023,942	1,129,042	105,100	10.3%
Non-defense environmental management	571,562	494,018	462,000	-32,018	-6.5%
Uranium enrichment D&D fund	210,200	220,200	277,000	56,800	25.8%
Science	2,266,674	2,235,708	2,482,460	246,752	11.0%
Departmental administration (gross)	215,017	218,747	239,888	21,141	9.7%
Departmental administration revenues	-84,997	-131,330	-130,630	700	0.5%
Inspector general	23,853	27,500	29,500	2,000	7.3%
Atomic energy defense activities					
Weapons activities	3,911,198	4,146,692	4,500,000	353,308	8.5%
Defense env. restoration & waste mgmt.	4,397,925	4,296,490	4,259,903	-36,587	-0.9%
Defense facilities closure projects	862,454	995,885	1,006,240	10,355	1.0%
EM privatization	330,000	200,000	516,857	316,857	158.4%
Other defense activities	1,692,462	1,638,777	1,667,160	28,383	1.7%
Defense nuclear waste disposal	200,000	190,000	190,000	—	—
Total, Atomic energy defense activities	11,331,039	11,467,844	12,140,160	672,316	5.9%
Power marketing administrations	222,543	230,439	234,847	4,408	1.9%
Federal energy regulatory commission	—	—	-28,060	-28,060	—
Nuclear waste disposal fund	182,000	156,000	190,000	34,000	21.8%
Total, Energy and Water Development	15,882,103	15,943,068	17,026,207	1,083,139	6.8%
<i>EWD civilian programs (250/270 functions) funding</i>	<i>(4,551,064)</i>	<i>(4,475,224)</i>	<i>(4,886,047)</i>	<i>(410,823)</i>	<i>(9.2%)</i>
<i>EWD defense (050 function) funding</i>	<i>(11,331,039)</i>	<i>(11,467,844)</i>	<i>(12,140,160)</i>	<i>(672,316)</i>	<i>(5.9%)</i>
Interior and Related Agencies					
Fossil energy research & development	358,643	362,403	383,408	21,005	5.8%
Alternative fuels production	-4,000	-1,500	-1,300	200	13.3%
Naval petroleum & oil shale reserves	143,786	107,000	22,500	-84,500	-79.0%
Elk Hills school lands fund	—	—	36,000	36,000	—
Energy conservation	533,506	591,112	773,500	182,388	30.9%
Economic regulation	2,725	2,725	1,801	-924	-33.9%
Strategic petroleum reserve	-10,918	—	160,120	160,120	—
Energy information administration	66,120	66,800	70,500	3,700	5.5%
Clean coal technology	-2,121	-101,000	-40,000	61,000	60.4%
Total, Interior and Related Agencies	1,087,741	1,027,540	1,406,529	378,989	36.9%
UE D&D fund discretionary payments	-376,648	-388,000	-398,088	-10,088	-2.6%
Excess FERC receipts	-46,049	-22,000	—	22,000	100.0%
Total, Department of Energy	16,547,147	16,560,608	18,034,648	1,474,040	8.9%
<i>DOE civilian programs (250/270 function) funding</i>	<i>(5,216,108)</i>	<i>(5,092,764)</i>	<i>(5,894,488)</i>	<i>(801,724)</i>	<i>(15.7%)</i>
<i>DOE defense (050 function) funding</i>	<i>(11,331,039)</i>	<i>(11,467,844)</i>	<i>(12,140,160)</i>	<i>(672,316)</i>	<i>(5.9%)</i>

Crosswalk from Appropriation Structure to Business Line

	FY 1999 Request	National Security	Energy Resources	Science & Technology	Environ- mental Quality	Other
Energy and Water Development						
Energy Supply	1,129,042	—	698,001	238,000	76,000	117,041
Non-defense Environmental Management	462,000	—	—	—	462,000	—
Uranium Enrichment D&D Fund	277,000	—	—	—	277,000	—
Science	2,482,460	—	—	2,482,460	—	—
Departmental Administration	109,258	—	—	—	—	109,258
Inspector General	29,500	—	—	—	—	29,500
Atomic Energy Defense Activities						
Weapons Activities	4,500,000	4,500,000	—	—	—	—
Defense Env. Rest. & Waste Mgmt.	4,259,903	—	—	—	4,259,903	—
Defense Facilities Closure Projects	1,006,240	—	—	—	1,006,240	—
EM privatization	516,857	—	—	—	516,857	—
Other Defense Activities	1,667,160	1,590,760	—	—	74,000	2,400
Defense Nuclear Waste Disposal	190,000	—	—	—	190,000	—
Total, Atomic Energy Defense Activities	12,140,160	6,090,760	—	—	6,047,000	2,400
Power Marketing Administrations	234,847	—	234,847	—	—	—
Federal Energy Regulatory Commission	-28,060	—	—	—	—	-28,060
Nuclear Waste Disposal Fund	190,000	—	—	—	190,000	—
Total, Energy and Water Development	17,026,207	6,090,760	932,848	2,720,460	7,052,000	230,139
Interior and Related Agencies						
Fossil Energy Research & Development	383,408	—	383,408	—	—	—
Alternative Fuels Production	-1,300	—	-1,300	—	—	—
Naval Petroleum & Oil Shale Reserves	22,500	—	22,500	—	—	—
Elk Hills school lands fund	36,000	—	36,000	—	—	—
Energy Conservation	773,500	—	773,500	—	—	—
Economic Regulation	1,801	—	—	—	—	1,801
Strategic Petroleum Reserve	160,120	—	160,120	—	—	—
Energy Information Administration	70,500	—	70,500	—	—	—
Clean Coal Technology	-40,000	—	-40,000	—	—	—
Total, Interior and Related Agencies	1,406,529	—	1,404,728	—	—	1,801
UE D&D Fund discretionary payments	-398,088	—	—	—	-398,088	—
Total, Department of Energy	18,034,648	6,090,760	2,337,576	2,720,460	6,653,912	231,940

Energy Supply

The Energy Supply appropriation accounts support a variety of energy research and applied technology programs as well as programs providing environmental oversight and mitigation. Organizations with programs supported by this appropriation include Solar and Renewable Resources Technologies; Nuclear Energy; Environment, Safety and Health; Fusion Energy; Technical Information Management; Field Management; and Oak Ridge Landlord.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Energy Supply					
Solar and renewable resources technologies	266,187	296,666	389,251	92,585	31.2%
Nuclear energy	298,800	277,756	325,750	47,994	17.3%
Environment, safety & health	87,137	80,499	76,000	-4,499	-5.6%
Fusion energy	219,449	229,656	228,160	-1,496	-0.7%
Technical information management	12,000	10,100	9,840	-260	-2.6%
Field offices and management	98,400	95,000	104,541	9,541	10.0%
Oak Ridge landlord	11,484	9,500	12,500	3,000	31.6%
AVLIS development and demonstration program . .	—	60,000	—	-60,000	-100.0%
Subtotal, Energy Supply	993,457	1,059,177	1,146,042	86,865	8.2%
Use of prior year balances & other adjustments . .	-49,245	-35,235	-17,000	18,235	51.8%
Total, Energy Supply	944,212	1,023,942	1,129,042	105,100	10.3%
Full time equivalent employment (FTEs)	1,796	1,717	1,676	-41	-2.4%

Solar and Renewable Resources Technologies

Mission

The mission of the Office of Energy Efficiency and Renewable Energy (EERE) is to work with its customers to lead the nation to a stronger economy, a cleaner environment, and a more secure future by developing and deploying efficient and renewable energy technologies that meet the needs of the public and the marketplace.

Program Overview

To fulfill its mission, the Office of Energy Efficiency and Renewable Energy (EERE) supports research and development efforts in energy efficiency and renewable technologies in utility, building, transportation, and industry sectors.

EERE is funded by the Energy Supply, and Energy Conservation appropriation accounts. The activities provided by the Energy Supply appropriation will be discussed in this section. Programs supported by the Energy Conservation appropriation will be discussed in the section on Interior and Related Agencies appropriations.

The programs of the Office of Energy Efficiency and Renewable Energy (EERE) funded by the Energy and Water Development Appropriations Subcommittee are designed to improve the performance and reduce the costs of a broad range of renewable electric, fuel, and related storage and power delivery technologies. Included are programs on alternative transportation fuels, advanced turbine cogeneration, photovoltaics, solar thermal, biomass, geothermal and hydroelectric power systems, hydrogen, energy storage, high temperature superconductivity, and utility restructuring. The technologies advanced under these programs will be the building blocks of cleaner, more flexible, energy systems of the future.

EERE's programs work in voluntary cost-shared partnerships with the nation's utilities, industries, states, and the public to advance the development and deployment of clean and efficient energy technologies. By advancing the research, development, and deployment of energy technologies, EERE's solar and other renewable energy programs diversify sources of electricity and fuel supply, improve the environment, and advance U.S. economic growth and job creation.

In its 1997 review of the national energy R&D portfolio, the President's Committee of Advisors on Science and Technology recommended expansion of a number of national energy R&D programs, including renewable energy programs among the highest priorities for increased funding. The Committee noted that renewable energy technologies produce a number of benefits, including air emission reductions and reduced dependence on imported oil. Crediting DOE with remarkable gains in technology performance and cost reductions, the Committee called for significant expansion of renewable energy R&D programs in order to meet the energy challenges and opportunities of the 21st century.

Budget Overview

In FY 1999, Solar and Renewable Resources Technologies (EE) is requesting \$372.3 million in the Energy Supply appropriation and is also planning to use \$17.0 million in prior year balances for a program level of \$389.3 million. In addition, EERE is requesting \$808.5 million in the Energy Conservation account within the Interior and Related Agencies Appropriations for a total of \$1,197.8 million (gross). The \$92.6 million increase in Energy Supply represents a 31.2 percent increase over the FY 1998 enacted level. This increase reflects Administration support of Solar and Renewable Resource Technology Programs to reduce air pollution, improve U.S. energy security, address global climate change and increase our nation's economic competitiveness. The FY 1999 budget request supports the President's Climate Change Technology Initiative.

The FY 1999 budget request for EE's Solar and Renewable Energy program funds a balanced portfolio of high priority technology research and development. The Solar and Renewable Energy deployment activities are heavily cost-shared by industry.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Solar and Renewable Resources Technologies					
Solar Energy					
Solar building technology research	2,277	2,658	5,000	2,342	88.1%
Photovoltaic energy systems	59,210	65,498	78,800	13,302	20.3%
Solar thermal energy systems	21,924	16,519	22,500	5,981	36.2%
Biomass/biofuels energy systems	54,327	58,840	89,791	30,951	52.6%
Wind energy systems	28,646	32,527	43,500	10,973	33.7%
Renewable energy production incentive program	2,000	2,954	4,000	1,046	35.4%
Solar program support	—	—	14,000	14,000	—
International solar energy program	661	1,375	8,800	7,425	540.0%
Solar technology transfer	—	—	1,360	1,360	—
National renewable energy laboratory	3,300	3,200	5,000	1,800	56.3%
Total, Solar Energy	172,345	183,571	272,751	89,180	48.6%
Geothermal	29,630	29,051	33,000	3,949	13.6%
Hydrogen research	14,809	16,003	24,000	7,997	50.0%
Hydropower	973	739	4,000	3,261	441.3%
Renewable Indian energy resources	4,000	3,939	—	-3,939	-100.0%
Electric energy systems and storage	31,378	42,788	38,500	-4,288	-10.0%
Federal building/remote power initiative	—	4,924	—	-4,924	-100.0%
Program direction	13,052	15,651	17,000	1,349	8.6%
Subtotal, Solar and Renewable Resources Technologies	266,187	296,666	389,251	92,585	31.2%
Use of prior year balances & other adjustments . . .	-22,367	-24,447	-17,000	7,447	30.5%
Total, Solar and Renewable Resources Technologies . .	243,820	272,219	372,251	100,032	36.7%
Full time equivalent employment (FTEs)					
	123	111	102	-9	-8.1%

The funding priorities of the Solar and Renewable program include Photovoltaics, Biofuels, Wind, and High Temperature Superconductivity technologies.

- ❖ The Photovoltaic program in recent years has achieved numerous technological breakthroughs from which commercial applications are currently being realized. There is great industry interest and financial support for taking these applications into the marketplace.
- ❖ The Biopower/Biofuels program has received similar interest and support from the utilities and transportation industry because these programs have demonstrated great potential in providing a real alternative energy resource for baseload power production, and alternative transportation fuels that will be cost-competitive with fossil fuels.
- ❖ While the cost of producing electricity from wind has decreased dramatically in the last decade, further improvements are needed to close the cost of energy gap between wind and conventional generation sources. The Wind program works directly with industry to provide U.S. wind companies with the technological

advantage needed to capture a sizeable share of the multi-billion dollar, rapidly expanding worldwide market for wind energy.

- ❖ The Department leads the national effort to capture the energy saving potential of high temperature superconductivity which will provide materials with 100 times the carrying capacity of copper wire. The program has mobilized the resources of U.S. industries, national labs, and universities to solve the problems of manufacturing superconducting electrical wires and designing super-efficient electrical systems that use these wires. Superconductivity has the potential to bring about an energy revolution just as fiber optics has transformed the communications industry.

FY 1999 Budget Request

The FY 1999 budget program level of \$389.3 million supports the following major program activities:

Photovoltaic (PV) — \$78.8 million

Most of the program's resources fund fundamental and applied research (\$52.4 million), which is essential for continued progress towards long-term goals of improved performance and lower costs. The remaining resources will be used in competitive procurements for cost-shared projects with U.S. utilities and the photovoltaic industry. The cost-shared projects focus on three areas: 1) researching manufacturing process technologies (**PVMat**), (\$13.4 million); 2) establishing and economically validating utility applications of photovoltaic systems (**UPVG**), (\$2.6 million); and 3) developing photovoltaic products that can be integrated into commercial and residential buildings (**PV:BONUS**), (\$4.0 million). In FY 1999, the program will complete Phase 2 of preliminary engineering development and initiate Phase 3 prototype development and field verification for the **PV:BONUS** project; develop thirteen percent efficient stable prototype amorphous silicon solar cells; develop codes, standards and safety specifications for residential PV roof systems; and, establish 25 major partnerships under the Million Solar Roofs Initiative (\$6.4 million).

Solar Thermal — \$22.5 million

The Solar Thermal Power (STP) Program is working to provide U.S. industry with technology options for concentrating solar power. In FY 1999, the STP Program is focused on: (1) demonstrating the reliability of distributed dish/engine systems through the highly cost-shared Utility-Scale Joint Venture Project (USJVP) and Dish/Engine Critical Components (DECC) Initiative; (2) proving molten-salt thermal storage technology through the cost-shared operation and testing of the 10-MW Solar Two pilot power tower (which will allow for the production of solar power during cloudy periods or at night); and (3) conducting R&D to develop advanced manufacturing techniques and high-temperature components to reduce overall system costs. Over the next five years, the STP Program, with industry and user communities, aims to achieve technology advancements able to produce distributed power at 12¢/kWh and dispatchable power at 9¢/kWh, down from the current demonstrated cost of 17¢/kWh. In FY 1999, the STP Program will install 20 dish/engine systems at utility, field and reservation sites in the U.S. Southwest; achieve 1000 hours mean time between failures for at least 5 dish/engine systems in unattended operation; produce power at 30¢/kWh with a 16 percent annual efficiency, and achieve an annual efficiency of 11.5 percent for dispatchable power systems.

Biopower/Biofuels — \$89.8 million

The Biomass program's goal is to develop cost-competitive technologies in two major focus areas: converting biomass resources into electric power production (Biopower), \$42.9 million and converting biomass to liquid transportation fuels, mainly ethanol (Biofuels), \$46.9

million. Biopower/Biofuels technology is pursued because: 1) it is a low-cost renewable baseload electric generation and gasoline alternative; 2) it will create jobs in rural areas through production of dedicated biomass feedstocks; and 3) it has two primary environmental benefits. The use of biofuels reduces greenhouse gas emissions, since carbon released into the atmosphere is offset by carbon consumption during the biomass resource growing cycle. In addition, the production of biofuels promotes the commercial use of agricultural and forest residues.

Wind — \$43.5 million

The wind program is working to reach a cost of wind-generated electricity of 2.5¢/kWh, at sites with 15 mile-per-hour average winds, by 2002. The program focuses R&D efforts on better understanding the complex aerodynamic phenomena involved in capturing energy from variable and turbulent winds to develop tools that help designers build more cost effective and reliable wind turbines (\$35.5 million). The program also works directly with industry in advanced technology development and verification projects to assist in moving research into commercial application (\$8.0 million). In FY 1999, two to three new projects will be initiated for field verification of advanced wind turbine technologies.

Solar Program Support — \$14.0 million

Solar program support includes two major activities: electric restructuring of the U.S. utility markets and a 5-year open solicitation of renewable energy technologies.

The Electric Industry Restructuring program (\$4.0 million) involves research on, and outreach activities related to, the restructuring of U.S. electric utility markets and the potential impacts, both positive and negative, on the development and deployment of renewable and energy efficiency technologies and programs. The purpose is to provide analysis and technical assistance to federal, state and local policy makers that will help them address renewable, energy efficiency and other public purpose goals through market-based, regulatory, and legislative mechanisms as they seek to obtain the economic benefits associated with introducing competition into the electricity industry.

The 5-year Open Solicitation for Renewable Energy Technologies (\$10.0 million) involves acceleration of widespread domestic acceptance and marketplace penetration of these technologies in order to reduce carbon and other emissions. It is estimated that federal funds of \$10 million per year would directly leverage investments of up to \$30 million per year and provide up to 115 MW (.21 million tons of direct carbon equivalent) per year of new renewable energy projects. Benefits are projected three-to-five years after the initial projects become operational, due to additional private investments beyond the leveraged projects.

International Solar Energy Program — \$8.8 million

The International Solar program increases U.S. exports of renewable technologies through strategic marketing and public/private partnerships and by increasing availability of commercial financing resources. Increasing sales and exports of proven renewable energy technologies will bring economic growth, jobs, a cleaner environment and lower prices for these technologies in the future. In FY 1999, we will increase activities in Asian and Pacific markets and support projects that reduce greenhouse gases.

Geothermal — \$33.0 million

Electric power from geothermal resources is delivered with few environmental impacts and has the highest reliability of base-load power from any source. Geothermal R&D efforts focus on: 1) locating and confirming undiscovered geothermal reservoirs; 2) reducing exploration

and production drilling costs in hard rock environment; 3) developing advanced techniques for managing geothermal energy production; 4) enhancing the efficiency and reliability of converting geothermal heat into electricity; and 5) reducing operating and maintenance costs at existing and planned geothermal facilities. This program contributes to the goal of a life-cycle cost of producing electricity at 3.5¢/kWh and will yield substantial increases in the amount of geothermal energy that can be economically recovered. In FY 1999, field tests of advanced drilling technology will be initiated that are expected to reduce well-costs by twenty percent. Programs leading to the installation of 40,000 new geothermal heat pump (GHP) units will be cosponsored with utilities and industry.

Hydrogen Research and Development — \$24.0 million

This program funds R&D efforts in hydrogen production, storage and transport technologies. In addition, it supports cost-shared projects with industry on hydrogen production by gasification, photochemical and reforming processes. All efforts are directed at development of critical technologies needed for the introduction of hydrogen into the energy infrastructure. In FY 1999, this program will support the development of new hydrogen-fueled electric vehicles, certifiable hydrogen storage for vehicles, and R&D on proton exchange membrane (PEM) fuel cells.

Electric Energy Systems and Storage — \$38.5 million

The program funds three different activities related to electricity. **High Temperature Superconductivity** (HTS) receives the majority of funding and focuses on increasing electric utility system capacity as well as motor and generator efficiencies (\$32.0 million). The Energy Storage program (\$6.0 million) continues R&D efforts on enhancing performance and reliability while reducing costs of utilities by providing dependable energy storage technologies. The Climate Challenge program (\$0.5 million) is a joint initiative between DOE and the electric and natural gas utility industries to reduce greenhouse emissions. These activities all contribute to developing the advanced electric power delivery technologies that will increase the flexibility, capacity and efficiency of the nation's electric power systems and will enable increased use of renewable energy systems. The HTS Program will make at least three awards for new projects under the Superconductivity Partnership Initiative and build the world's first superconducting magnet operating at liquid nitrogen temperature.

Hydropower — \$4.0 million

The program supports the development of advanced turbine technology which will allow the nation to maximize the use of its hydropower resources, while minimizing adverse environmental impacts. Preliminary designs for advanced environmentally-friendly hydropower turbines have been completed by the DOE program in partnership with industry. Detailed design and engineering, followed by full-scale prototype testing at operating hydropower sites, will be undertaken in subsequent years. In addition, the program will begin intensive studies of advanced hydropower turbine design and techniques that will enable fish passage through turbines.

Program Direction — \$17.0 million

Funding supports 102 FTEs at both Headquarters and the field (Salary and Benefits - \$9.4 million, Travel - \$0.4 million, Support Services for all Solar and Renewable Energy programs - \$4.8 and Other Related Expenses - \$2.4 million). This funding includes a total of \$2.5 for staffing and operation of the Golden Field Office.

**Highlights of
Program Changes
(\$ in millions)**

Photovoltaic (PV) (FY 1998 \$65.5; FY 1999 \$78.8)		+\$13.3
❖	Advanced Materials and Devices will support four to five additional Thin-Film Partnership industrial contracts to improve the efficiency of silicon cells and thin-film modules. (FY 1998 \$16.0; FY 1999 \$19.0)	+\$3.0
❖	PVMaT activities will fund four-to-five additional contracts to achieve manufacturing cost reductions of 50 percent from 1996 levels. (FY 1998 \$9.0; FY 1999 \$13.4)	+\$4.4
❖	Supports the development of codes, standards and safety specifications for building integrated residential and commercial systems. (FY 1998 \$12.4; FY 1999 \$14.4)	+\$2.0
❖	PV:BONUS Project increase will be used for Phase III building integrated development contracts. (FY 1998 \$1.5; FY 1999 \$4.0)	+\$2.5
❖	The Million Solar Roofs Initiative expands the partnership with utilities, builders, cities and states. (FY 1998 \$5.0; FY 1999 \$6.4)	+\$1.4
Solar Thermal (FY 1998 \$16.5; FY 1999 \$22.5)		+\$6.0
❖	In thermal systems research, the optical materials outdoor acceptance program is completed. (Other advanced materials research is on-going.) (FY 1998 \$6.1; FY 1999 \$5.5)	-\$0.6
❖	Supports power applications research for a new initiative to cost-share a MW-scale dish/engine installation which will allow industry to install, test and evaluate systems in utility, generator and user environments. Additional research will be undertaken in the SolMaT Initiative to develop commercially viable and reliable drive systems and to field-test a composite dish concentrator. Support will be provided to a second U.S. dish/engine team to develop advanced dish/engine components to enhance the reliability of dish/engine systems. (FY 1998 \$10.4; FY 1999 \$17.0)	+\$6.6
Biopower/Biofuels (FY 1998 \$58.8; FY 1999 \$89.8)		+\$31.0
❖	Systems Development (Biopower) will provide support to enable one project in the Biomass Power for Rural Development Initiative to enter into the construction phase. It will also expand field validation of the co-firing of biomass with coal. Pilot systems will begin the construction phase in the Modular System Systems Development project. (FY 1998 \$21.5; FY 1999 \$37.3)	+\$15.8
❖	The Ethanol Production (Biofuels) program will support demonstrations of commercially viable technologies. (FY 1998 \$25.4; FY 1999 \$36.4)	+\$11.0
❖	The Feedstock Production (transportation) program will fund additional deployment of ethanol production strategies. (FY 1998 \$2.5; FY 1999 \$6.0)	+\$3.5
❖	The Regional Biomass Energy Program (transportation) will use the existing infrastructure to deploy biomass technologies through cost-shared grants and activities with state energy offices and federal and regional organizations. (FY 1998 \$2.0; FY 1999 \$3.5)	+\$1.5
Wind (FY 1998 \$32.5; FY 1999 \$43.5)		+\$11.0
❖	Fabrication of an engineering and manufacturing development prototype of a next generation turbine is supported. Activities will include field testing; testing, design review, analysis and management support for 11 ongoing industry subcontract	

projects; and the selection of two to three partners under a new Turbine Verification Program solicitation for wind projects up to 25MW in size. (FY 1998 \$13.0; FY 1999 \$24.8)

+ \$11.8

- ❖ Applied Research reduces efforts in core research. (FY 1998 \$11.5; FY 1999 \$10.7) - \$0.8

Solar Program Support (FY 1998 \$0.0; FY 1999 \$14.0) +\$14.0

- ❖ FY 1999 is the first year of a five-year open solicitation for renewable energy technologies accelerate the development and use of the most promising technologies as determined by the marketplace. +\$10.0
- ❖ Provides analysis and technical assistance to DOE and states on the restructuring of U.S. electricity markets and the potential impacts of restructuring on the development and deployment of renewable and energy-efficiency technologies. +\$4.0

International Solar Energy Program (FY 1998 \$1.4; FY 1999 \$8.8) +\$7.4

- ❖ Helps to deploy U.S. Renewable Technologies (USRE) technologies worldwide. (FY 1998 \$0.0; FY 1999 \$2.0) +\$2.0
- ❖ Supports expanded market preparation, field validation and deployment in Asia/Pacific markets. (FY 1998 \$0.0; FY 1999 \$3.4) +\$3.4
- ❖ Expands projects under U.S. Initiative on Joint Implementation (USII). (FY 1998 \$1.4; FY 1999 \$3.4) +\$2.0

Geothermal (FY 1998 \$29.1; FY 1999 \$33.0) +\$3.9

- ❖ Expands on drilling, resource characterization and conversion efficiency to accelerate the use of geothermal power systems.

Hydrogen Research and Development (FY 1998 \$16.0, FY 1999 \$24.0) +\$8.0

- ❖ Accelerates research and development and permits three cooperative agreements to be awarded. The new awards will include a hydrogen fueling station for fleet vehicles and/or buses, installation and operation of a 50 kWe Proton Exchange Membrane Fuel Cell, and a stand-alone power generation system using 3-5 kWe Proton Exchange Membrane fuel cells fueled by reformat. The increase will allow scale-up and integration of Sorbent Enhanced Reforming (SER) process system and fabrication of a scale-up super gasification reactor for production of hydrogen from high moisture content wastes.

Electric Energy Systems & Storage (FY 1998 \$42.8; FY 1999 \$38.5) -\$4.3

- ❖ Energy Storage R&D increase provides for development of multiple storage applications relevant to mitigate the impact of reduced power quality due to deregulation. (FY 1998 \$3.9; FY 1999 \$6.0) +\$2.1
- ❖ The request includes a decrease of \$6.9 million due to the termination of the Electric and Magnetic Fields R&D program. (FY 1998 \$6.9; FY 1999 \$0.0) -\$6.9
- ❖ Design begins on a voluntary program to encourage utility commitments in the post-2000 period for climate change initiatives. (FY 1998 \$0.0; FY 1999 \$0.5) +\$0.5

Hydropower (FY 1998 \$0.7; FY 1999 \$4.0) +\$3.3

- ❖ The requested increase provides for engineering design work that will lead to the development of an environmentally-friendly turbine for hydropower applications.

Nuclear Energy

Mission

The Office of Nuclear Energy, Science & Technology (NE) maintains the Federal Government's technical expertise in nuclear security and safety issues. Through its unique research and development infrastructure, the Department strives to maintain nuclear energy as a reliable, economical and environmentally safe source of energy for the next century. Because of the nation's reliance on this vital technology, the Department of Energy continues to invest in services, products, and technologies that are beyond the capability of private industry to fund alone.

Program Overview

The Office of Nuclear Energy, Science and Technology (NE) manages efforts to: build and deliver durable and reliable nuclear power systems to NASA and other Federal agencies; produce and distribute a reliable supply of radioisotopes for medical and research purposes; ensure continued U.S. leadership in nuclear technology by supporting nuclear education initiatives; address issues associated with the long-term operation of nuclear power plants; manages test and research reactor to meet research, isotope production and other Departmental goals; and oversee the legacy of the nation's uranium supply and enrichment activities.

Nuclear Energy also continues its commitment to improve the safety of Soviet-designed nuclear reactors abroad. Since 1992, NE has led the U.S. Government's effort to reduce the health and environmental threats posed by the continued operation of aging nuclear reactors in Russia, Ukraine, and Central and Eastern Europe. Funding for these activities is in the Other Defense Activities appropriation account, and will be discussed in that section.

The FY 1999 NE program includes two new initiatives that focus research and development efforts on addressing key issues affecting the future of nuclear energy and the nation's commercial nuclear reactors. Academia, the national laboratories, and industry will engage in collaborative research on advanced concepts and technologies in nuclear energy. This emphasis will ensure that the U.S. maintains nuclear technology as a part of its diverse portfolio of energy supply options. Particular attention will be on increasing the reliability and safety of nuclear fuel, reducing the rate of spent fuel generation, and improving capacity factors and renewing the licenses of existing nuclear power plants.

Budget Overview

The FY 1999 budget request for Nuclear Energy programs (excluding Naval Reactors) is \$360.8 million, including \$35.0 million within the Other Defense Activities account. The increase of \$56.2 million over the FY 1998 appropriation supports increased levels of effort for the University Nuclear Science and Isotope Support programs, and fully funds two new research and development initiatives.

NE has also realigned two of its programs. The budget combines termination activities at the Experimental Breeder Reactor-II (EBR-II) at Argonne National Laboratory-West (ANL-West), and maintenance activities at the Fast Flux Test Facility (FFTF) in Hanford, WA, to form the Facilities Program. The Office of Environmental Management previously funded surveillance and maintenance activities at FFTF. Beginning in FY 1999, the Office of Chief Financial Officer will fund landlord responsibilities. Traditionally, NE has funded Oak Ridge Landlord activities.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Nuclear Energy					
Nuclear energy research and development					
Light water reactor	36,993	—	—	—	—
Advanced radioisotope power system	36,662	40,034	40,500	466	1.2%
Nuclear technology research and development	19,475	20,000	25,000	5,000	25.0%
Test reactor area landlord	3,000	7,339	7,400	61	0.8%
Advanced test reactor fusion irradiation	757	—	—	—	—
University reactor fuel assistance and support .	4,000	7,000	10,000	3,000	42.9%
Nuclear energy research initiative	—	—	24,000	24,000	—
Total, Nuclear energy research and development . .	100,887	74,373	106,900	32,527	43.7%
Facilities	110,689	99,053	96,150	-2,903	-2.9%
Uranium programs	56,466	63,857	66,700	2,843	4.5%
Isotope support	11,704	19,473	22,450	2,977	15.3%
Nuclear Energy Plant Optimization	—	—	10,000	10,000	—
Program direction	19,054	21,000	23,550	2,550	12.1%
Subtotal, Nuclear Energy	298,800	277,756	325,750	47,994	17.3%
Use of prior year balances and other adjustments .	-22,328	-8,221	—	8,221	100.0%
Total, Nuclear Energy	276,472	269,535	325,750	56,215	20.9%
Full time equivalent employment (FTEs)					
	196	180	168	-12	-6.7%

The FY 1999 budget reflects the Department's commitment to realizing the U.S. investment in its 107 aging nuclear power plants. To address the issues associated with keeping our domestic nuclear power plants operating well into the next century, the Department has developed the Nuclear Energy Research Initiative (NERI) and the Nuclear Energy Plant Optimization (NEPO). Through NERI, the Department will solicit proposals from the scientific and technical community for research in areas relevant to addressing the vital issues facing nuclear energy. NERI will include a two stage independent peer review process to evaluate and select specific research proposals to ensure the scientific and technical merit and relevancy of the research.

The Department believes that the continued, safe and economic operation of the nation's nuclear power plants is essential in meeting the President's goals set forth in the Administration's Climate Change Initiative to reduce greenhouse gas emissions. Private industry will match federal funds for the NEPO program to address license extension and other issues that could impact the continued operation of U.S. commercial nuclear power plants. The proposed program has been developed in accordance with these recommendations and is consistent with the goals established by the 1997 DOE Strategic Plan. The Department will develop a detailed Joint Strategic Plan in cooperation with the electric utility industry's Electric Power Research Institute (EPRI) and plans to collaborate closely with EPRI to meet the plan's objectives.

FY 1999 Budget Request

The FY 1999 budget request for Nuclear Energy is \$360.8 million, of which \$325.8 million is in the Energy Supply account.

The request for the **Advanced Radioisotope Power Systems** program is \$40.5 million, the same as the FY 1998 appropriation. With the successful launch of the NASA Cassini mission, the program will focus on developing and testing an advanced power system for future NASA missions. In addition, the program will continue to maintain the infrastructure needed to produce durable power sources for space and terrestrial applications. This program represents the sole national capability to produce radioisotope power systems.

NE will fund electrometallurgical treatment R&D activities at \$25.0 million. Under the **Nuclear Technology R&D** program, research activities will support the Experimental Breeder Reactor-II (EBR-II) spent fuel treatment demonstration at the Argonne National Laboratory-West (ANL-West). FY 1999 is the last year that the Department expects to request funding for the demonstration. Nuclear Energy, under the guidance of the Department's Research and Development Council, will develop and implement a comprehensive plan to oversee and direct completion of the demonstration and evaluate its results, consistent with the findings and recommendations of the studies of the project done to date for the Department by the National Academy of Sciences (NAS). As the NAS has recommended, clear criteria for determining the viability of the technology will be developed and used to guide technical evaluation of the demonstration.

Landlord costs at the Test Reactor Area (TRA) site total \$7.4 million in FY 1999. The TRA is located at the Idaho National Engineering and Environmental Laboratory (INEEL). TRA Landlord activities in FY 1999 continue to provide improvements in fire safety, and include funding to initiate the upgrading of the site's electrical utility system.

An increase in the **University Nuclear Science and Reactor Support** program highlights NE's commitment to maintaining U.S. leadership in nuclear research and education. At \$10.0 million, the program plans to expand support for educational and research grants; supply fresh fuel to and transport spent fuel from university research reactors; and continue the conversion of another university reactor fuel core from highly enriched uranium to low enriched uranium. The FY 1999 request also includes funding to support U.S. schools in instructing pre-college students in subjects related to science and technology.

The FY 1999 request for the **Nuclear Energy Research Initiative (NERI)** is \$24.0 million. The program supports the PCAST recommendation to establish "a properly focused R&D effort to address the problems of nuclear-fission power." Through a unique partnership among universities, laboratories, and industry participants, research will focus on the development of advanced nuclear technologies. Key areas of research include proliferation-resistant reactor and fuel technologies; high efficiency combined heat and power systems; nuclear safety and risk analysis; materials science and non-destructive testing; thermal hydraulics; nuclear fuel and reactor physics; advanced lower power reactor designs and applications; high efficiency nuclear fuel; advanced instrumentation, controls and diagnostics; and new technologies for weapon wastes (storage and permanent disposal).

The request for the **Facilities** program is \$96.2 million and includes funding to continue shutdown activities at the EBR-II. In addition, the Facilities program supports the continued maintenance of the Fast Flux Test Facility (FFTF) in a standby mode. The Department is considering the use of FFTF in the U.S. strategy to produce tritium for the nuclear weapons stockpile. The Secretary of Energy expects to decide the future of FFTF by December 1998.

The request of \$66.7 million for **Uranium Programs** is consistent with the FY 1998 appropriation. The program maintains responsibility for the effective management of the Department's excess uranium and depleted uranium hexafluoride inventories. The program will continue safeguard and security activities related to the disposition of highly enriched

uranium at the Portsmouth Gaseous Diffusion Plant. The budget also supports the inspection of approximately 21,000 depleted uranium cylinders for corrosion, restacking 7,050 cylinders to permit 100 percent visual inspection, and painting 1,400 storage cylinders at the Paducah site and 1,000 cylinders at the Oak Ridge site. The program also supports up to eight additional special monitoring trips to ensure that Russian low enriched uranium sold to the United States Enrichment Corporation (USEC) is derived from highly enriched uranium removed from dismantled Russian nuclear weapons.

The request for the **Isotope** program is \$22.5 million, which will provide for the continued production and distribution of isotopes necessary for medical, industrial, and research purposes. The program continues to support the production of the vital medical isotope molybdenum-99 until more reliable commercial sources become available. The request also includes \$6.0 million to begin construction of a new isotope target irradiation facility at the Los Alamos Neutron Science Center (LANSCE) accelerator.

The **Nuclear Energy Plant Optimization (NEPO)** program was developed in accordance with the recommendations from the PCAST and the goals enumerated in the President's Climate Change Proposal of October 22, 1997. The President's proposal supports the reduction of greenhouse gas emissions to the 1990 level by the period 2008-2012. The Department believes that the continued, safe and economic operation of the nation's nuclear power plants is essential in meeting the President's goals. Nuclear energy currently provides nearly 25 percent of the country's electricity without producing carbon dioxide, sulfur oxide, or nitrogen oxide emissions that occur with the use of fossil fuels. The FY 1999 request of \$10.0 million for NEPO would support initiatives to extend the life of operating commercial nuclear plants, establish a process for license renewals, and improve the efficiency and capacity of existing plants. The Department will work closely with the Electric Power Research Institute (EPRI), and plans to share the costs of meeting the program's objectives with the private industry.

The budget request includes \$23.6 million to meet staffing requirements in FY 1999. The **Program Direction** account supports salaries, benefits, travel and services for 168 Headquarters and Field personnel providing technical direction to Nuclear Energy R&D, the International Nuclear Safety Program, Uranium Programs, and the Isotope Production & Distribution Fund.

Highlights of Program Changes (\$ in millions)

Nuclear Technology R&D

+\$5.0

The budget request reflects the consolidation of all electrometallurgical treatment R&D activities into one decision unit. The total effort for electrometallurgical R&D increases by \$5.0 million in FY 1999. The increase will fund research activities that directly relate to the demonstration and evaluation of electrometallurgical treatment technology on EBR-II spent fuel. (FY 1998 \$20.0; FY 1999 \$25.0)

University Nuclear Science and Reactor Support

+\$3.0

An increase in funding for the University Nuclear Science and Reactor Support program is required to continue the expansion of the Nuclear Engineering Education Research Grants program (+\$0.8). Additional financing is also needed to assist in the maintenance and upgrading of university-owned reactors (+\$0.7). The program will also initiate efforts in radiochemistry faculty support (+\$0.5), begin conversion of another nuclear reactor core from highly enriched uranium to low enriched uranium fuel (+\$0.2); and increase the number of grants and fellowships (+\$0.8). (FY 1998 \$7.0; FY 1999 \$10.0)

Nuclear Energy Research Initiative**+\$24.0**

The Nuclear Energy Research Initiative is a new program in FY 1999 that supports innovative nuclear energy R&D as recommended by the Presidential Committee of Advisors on Science and Technology (PCAST) Panel. (FY 1998 \$0.0; FY 1999 \$24.0)

Facilities**-\$2.9**

The request for the Facilities program consolidates activities formerly supported in the Termination Costs decision unit with the transfer of responsibility for the **Fast Flux Test Facility (FFTF)** from the Office of Environmental Management (EM). In FY 1999, all electrometallurgical treatment R&D activities are funded within the Nuclear Technology R&D decision unit. Nuclear Energy also assumes responsibility for waste management activities at Argonne National Laboratory-West (ANL-West). EM partially funded waste management activities in FY 1998. The program also includes funding to support the demonstration of electrometallurgical technology in the treatment of spent fuel from the Experimental Breeder Reactor-II (EBR-II). (FY 1998 \$99.1; FY 1999 \$96.2)

Uranium Programs**+\$2.8**

The program will paint an additional 1,200 depleted uranium cylinders (+\$2.8), begin maintenance activities at the leased and non-leased facilities deferred from FY 1998 (+\$3.4), and meet Departmental commitments for post-retirement benefits for personnel who supported the Uranium Enrichment program before July 1, 1993 (+\$1.2). The increase is offset by decreasing safeguard costs for HEU oxide inventories at the Paducah site (-\$2.5), and postponement of construction activities on a new depleted uranium cylinder storage yard until FY 2000 (-\$3.0). (FY 1998 \$63.9; FY 1999 \$66.7)

Isotope Support**+\$3.0**

Funding requirements for **molybdenum-99 (mo-99)** decrease in FY 1999 due to the completion of major construction modifications to the Hot Cell Facility at Sandia National Laboratory. The Isotope Support request includes \$6.0 million to begin construction of a **new target irradiation station at Los Alamos National Laboratory**. Isotopes are currently produced at Los Alamos when the accelerator is operating to accomplish the primary missions of the laboratory for the Department's Office of Defense Programs. The new facility will allow the production of isotopes to continue for at least eight months per year unincumbered by other laboratory programs. (FY 1998 \$19.5; FY 1999 \$22.5)

Nuclear Energy Plant Optimization**+\$10.0**

Nuclear Energy Plant Optimization is a new program in FY 1999 focusing on nuclear plant license renewal activities in support of the Administration's Climate Change Initiative. (FY 1998 \$0.0; FY 1999 \$10.0)

Environment, Safety and Health (Non-Defense)**Mission**

The Office of Environment, Safety and Health (EH) develops innovative, unique, and cost-effective approaches for the protection of Department of Energy (DOE) workers, the public,

and the environment. This commitment is demonstrated by continuous improvement in program and policy development; independent oversight of the status of environment, safety, health, and safeguards and security programs; and sharing of technical resources, assistance, and information.

The Environment, Safety and Health program is funded in two appropriations; (1) Energy Supply and (2) Other Defense Activities. Total funding for EH is \$150.0 million; non-defense, \$76.0 million; defense, \$74.0 million. The non-defense EH program consists of technical assistance, the National Environmental Policy Act (NEPA) program, management and administration, and a program direction decision unit. The defense EH program includes oversight, domestic and international health studies programs, the Radiation Effects Research Foundation (RERF) program, and a program direction decision unit.

Program Overview

The Energy Supply programs of the Office of Environment, Safety and Health are discussed in this section and are concentrated in three business functions: Technical Assistance, National Environmental Policy Act, and Management and Administration, as well as a portion of the Office of Environment, Safety and Health's Program Direction funding.

The Technical Assistance program includes a range of corporate-based functions which support key departmental missions to address emerging program vulnerabilities, significant nuclear and industrial hazards, and improved methods for managing or implementing safety programs. Technical Assistance is comprised of several subprograms, including: Line Management Support, which focuses on improving safety, environmental protection, and health programs, and includes those efforts centered on ensuring the safe operation of the Department's nuclear facilities and hazardous activities, such as WorkSmart Standards and the DOE Laboratory Accreditation Program; Environment, Safety and Health Guidance, which supports the development of interpretation and guidance documents related to environmental legislation; and Interagency Representation, which entails monitoring emerging environment, safety and health regulations affecting Departmental operations.

The National Environmental Policy Act program supports the implementation of the Department's activities by providing the corporate leadership needed to assure compliance with the National Environmental Policy Act and related environmental review requirements, through the course of reviews, guidance and workshops. The National Environmental Policy Act program also works to streamline the environmental review process to reduce cost and increase efficiency.

The Management and Administration program includes those business functions necessary to provide centralized management and direction for the Office of Environment, Safety and Health. The major subprograms within Management and Administration include: Management Planning, which provides corporate leadership and management tools to enhance the environment, safety and health performance of DOE line organizations, and includes strategic planning, risk-based priority setting, and effective budget allocation; and Information Management, which maximizes the sharing and efficient use of environment, safety and health data throughout the Department of Energy complex; and Technical Training and Professional Development, which assures that Environment, Safety and Health staff are properly trained to perform their duties in accordance with departmental policy and standards.

The Program Direction account includes salaries, benefits, and travel for the majority of the Office of Environment, Safety and Health's federal staff, as well as funding for the Office of Environment, Safety and Health's share of the Working Capital Fund. This fund provides for the costs for services such as space utilization, telephone service, and supplies.

Budget Overview

The FY 1999 Request for Non-Defense Environment, Safety and Health programs is \$76.0 million, which is \$3.2 million or 4 percent less than the FY 1998 comparable amount. Of the FY 1999 Request, approximately 25 percent is for Technical Assistance, 4 percent is for National Environmental Policy Act, 20 percent is for Management and Administration, and 51 percent is for Program Direction.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Environment, Safety & Health					
Office of environment, safety and Health (non-defense)	43,900	41,718	37,602	-4,116	-9.9%
Program direction	43,237	38,781	38,398	-383	-1.0%
Subtotal, Environment, Safety & Health	87,137	80,499	76,000	-4,499	-5.6%
Use of prior year balances	-1,421	-1,295	—	1,295	100.0%
Total, Environment, Safety & Health	85,716	79,204	76,000	-3,204	-4.0%
Full time equivalent employment (FTEs)	350	329	309	-20	-6.1%

FY 1999 Budget Request

The FY 1999 Energy Supply request supports the Office of Environment, Safety and Health's major performance objectives. The performance measures include: improved understanding of the health effects associated with nuclear weapons production, testing, and use in DOE activities; reduced worker health and safety impacts, no fatalities and fewer serious injuries, fewer instances of significant worker exposures, and lower overall total exposures to radiological and toxicological materials; fewer contamination and abnormal operating events, and fewer procedural violations. In addition, the Office of Environment, Safety and Health goal of preventing worker accidents and saving time and resources through early engagement of DOE workers and professionals in planning the work and identifying hazards, will be measured by: reducing the time spent in work planning, with a corresponding reduction in cost, without compromising safety and health; and decreasing lost workdays due to occupational illness or injury (on an annual basis).

The Environment, Safety and Health **Technical Assistance** program is requesting \$19.3 million in FY 1999, a decrease of \$2.1 million, or 10 percent, below the FY 1998 comparable amount. The program will continue efforts to minimize threats to the health and safety of the workforce spanning the design, construction, operation, and decontamination and decommissioning of nuclear weapons production and research related facilities. In addition, the program will provide: direct assistance to field safety and health programs through the development of tools and processes designed to improve safety, health and environment; interpretations and guidance related to numerous environmental regulations; and coordination on emerging environment, safety and health requirements that impact all Departmental activities.

The **National Environmental Policy Act** program is requesting \$3.0 million, which is equivalent to the FY 1998 comparable amount. The FY 1999 request continues to foster sound departmental planning and decision-making, and increased public trust, by supporting the effective implementation of the NEPA process.

The **Management and Administration** program is requesting \$15.3 million in FY 1999, a \$1.9 million decrease or 11 percent below the FY 1998 comparable amount. The FY 1999 request supports all management and direction necessary to execute the Environment, Safety and Health mission throughout the Department of Energy complex, including budgeting, financial control, procurement, information management, and training.

The FY 1999 request provides \$38.4 million for **Program Direction**, which is \$0.4 million or 1 percent less than the FY 1998 comparable amount. This FY 1999 Request provides for salaries, benefits and travel for a total of 309 full time equivalents (FTEs), a decrease of 20 FTEs from the comparable FY 1998 staffing level. The FY 1999 request also includes \$5.6 million for the Working Capital Fund, an approximate \$0.2 million or 3 percent increase over the comparable amount provided in FY 1998.

Highlights of Program Changes (\$ in millions)

Technical Assistance (FY 1998 \$21.4; FY 1999 \$19.3) **-\$2.1**

The overall decrease in Technical Assistance reflects programmatic reductions in several areas of the program (-\$1.2), as well as efficiencies (-\$0.7) to be realized through streamlining activities and the conversion of several support efforts from contractor to Federal staff. The decrease also reflects the significant success of the Enhanced Work Planning program, which has largely been adopted and funded directly by field offices (-\$1.4), as well as a reduced need for technical assistance in support of programmatic environmental impact statement and guidance documents (-\$0.5). These decreases are offset in part by increases related to the expansion of the chemical safety program (+\$0.2), the improvement of the self-assessment program supporting the Department's Integrated Safety Management System (+\$0.6), and increased efforts towards beryllium exposure control (+\$0.9).

Management and Administration (FY 1998 \$17.3; FY 1999 \$15.3) **-\$2.0**

The decrease in Management and Administration reflects efficiencies to be realized in the areas of environment, safety and health site performance models, specialized environment, safety and health training, and monitoring new environment, safety and health objectives in new contracts.

Program Direction (FY 1998 \$38.8; FY 1999 \$38.4) **-\$0.4**

Program Direction decreases (-\$0.6) as a result of a reduction of 20 FTEs. This is offset, in part, by a slight increase in the Working Capital Fund (+\$0.2) based on the Office of Human Resources and Administration's funding projections for FY 1999.

Energy Research

Mission

The mission of the Office of Energy Research programs included in the Science appropriation involves basic research in energy related areas which provides the science that triggers and drives technological development within the Department, and the High Energy and Nuclear Physics programs, which conduct fundamental research in energy, matter, and the basic forces of nature. Research in both missions is conducted by both DOE National laboratories and university researchers, and the mission includes operation, maintenance, and construction of new scientific facilities. The Fusion Energy Sciences program, which focuses on the scientific foundations that underpin the fusion process, is contained within the Energy Supply appropriation.

Program Overview

Fusion Energy Sciences seeks to provide a science base for fusion as a potential energy source of the future. The program supports several fusion reactor facilities, and both laboratory and university based experimental and theoretical research teams. The program has been restructured to concentrate on the scientific principles involved in fusion rather than on fusion technologies. The mission of the program is "Acquire the knowledge base needed for an economically and environmentally attractive fusion energy source." The program goal is to work collaboratively within the international community to develop the scientific basis for a fusion energy development program. The program also fosters the advancement of plasma science which has applications in other fields of science and near-term industrial uses.

Budget Overview

The FY 1999 request for the Office of Energy Research is \$2,718.3 million. Of this \$2,490.1 million is for the Science appropriation, and \$228.2 million for Fusion Energy Science in the Energy Supply appropriation. Superconducting Super Collider prior year funds (\$7.6 million) will be used to offset the Science request.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Energy Research					
Fusion Energy	219,449	229,656	228,160	-1,496	-0.7%
Use of prior year balances	-2,133	-668	—	668	100.0%
Total, Energy Research	217,316	228,988	228,160	-828	-0.4%
Full time equivalent employment (FTEs)	59	49	49	—	—

**FY 1999 Budget
Request****Fusion Energy Sciences**

The FY 1999 budget request for Fusion Energy Sciences is \$228.2 million, a \$1.5 million decrease below the FY 1998 appropriation. The program will focus on fusion science, including fusion plasma and general plasma experimental research and alternative concepts to tokamaks. Princeton will complete fabrication and start operation of the National Spherical Torus Experiment (NSTX) in FY 1999 (FY 1998 \$12.1 million; FY 1999 \$5.5 million), a project which will address fundamental plasma and fusion science issues in an ultra compact tokamak. Upgrade of the **DIII-D** facility is also continued (FY 1998 \$2.4 million; FY 1999 \$2.7 million), and there will be significant increases in research and operations of the DIII-D and Alcator C-Mod facilities. The Fusion Energy Sciences program will maintain a position of leadership in general plasma science research and increase emphasis on innovative magnetic confinement configurations other than the tokamak.

The **International Thermonuclear Experimental Reactor (ITER)** Engineering Design Activity (EDA) is completed in FY 1998. The program will continue to participate in the ITER process to support international collaboration in fusion, including the evaluation of a variety of options for a next generation machine. The U.S. plans to participate in the post-EDA work at a reduced level appropriate for a party not offering a candidate construction site.

**Highlights of
Program Changes
(\$ in millions)**

- Fusion Energy Science (FY 1998 \$229.7; FY 1999 \$228.2) -\$1.5**
- ❖ Funding related to TFTR operations and research continues to decline following shutdown of the facility in FY 1997. -\$7.8

- ❖ Assembly of the National Spherical Torus Experiment (NSTX) is completed in FY 1999; operations and research activities begin. +\$10.1
- ❖ The **ITER** EDA is completed in FY 1998. -\$52.6
- ❖ **ITER** joint baseline design (post-EDA) is funded in FY 1999 +\$12.0
- ❖ **ITER** EDA funds are redirected as follows: research and operations of D111-D and Alcator C-Mod (+\$6.8); fusion and plasma technologies and advanced design (+\$24.8); alternate concepts experiments (+\$5.8); and, fusion theory (+\$1.7). +\$39.1

Technical Information Management

Mission

The Technical Information Management Program collects, manages and disseminates scientific and technical information resulting from Department of Energy research and development and environmental programs. The program also provides worldwide energy scientific and technical information to DOE and U.S. industry, academia and the public.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Technical Information Management					
Technical information management program	3,300	2,600	2,340	-260	-10.0%
Program direction	8,700	7,500	7,500	—	—
Subtotal, Technical Information Management	12,000	10,100	9,840	-260	-2.6%
Use of prior year balances	-263	-68	—	68	100.0%
Total, Technical Information Management	11,737	10,032	9,840	-192	-1.9%
Full time equivalent employment (FTEs)	126	105	99	-6	-5.7%

FY 1999 Budget Request

Funding for the program will be reduced below the FY 1998 level to \$9.8 million. Funding will continue ongoing research and development information collection, and information and management of classified information. The construction project to retrofit the Office of Scientific and Technical Information HVAC system was completed in FY 1998 (-\$1.0).

Field Operations

Mission

The Field Operations account provides support for the Multi-Purpose Operations Offices: Chicago, Idaho, Oak Ridge and Oakland. These Operations Offices provide centralized managerial, administrative, and technical support to the programmatic activities at their respective sites and nineteen laboratories and facilities nationwide.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Field Offices and Management					
Field Offices and Management	98,400	95,000	104,541	9,541	10.0%
Use of prior year balances	—	-211	—	211	100.0%
Total, Field Offices and Management	98,400	94,789	104,541	9,752	10.3%
Full time equivalent employment (FTEs)	942	948	938	-10	-1.1%

FY 1999 Budget Request

Funding provides for salaries and benefits, travel, support services and other related expenses for these four Operations Offices. This funding is increasing by \$9.8 million above the FY 1998 funding level. This increase is due to cost of living adjustments (\$1.7 million), support service increase (\$0.5 million) due to a need for more technical information system expertise, and other related expenses increases (\$7.3 million) due to an increase in GSA rent payments, and increases in modernization activities, such as upgrading elevators and air conditioning systems.

Oak Ridge Landlord

Mission

The Oak Ridge Landlord account provides for infrastructure requirements and general operating costs for activities outside the fences of the Oak Ridge National Laboratory, the Y-12 Plant, and the East Tennessee Technology Park.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Oak Ridge Landlord	11,484	9,500	12,500	3,000	31.6%

FY 1999 Budget Request

Funding for the program will be increased above the FY 1998 level to \$12.5 million. Additional funding is provided to implement the Defense Nuclear Facility Board recommendations, the Water Plant modernization, and to provide adequate physical security.

Mission

The mission of the Office of Energy Research programs included in the Science appropriation involves basic research in energy related areas which provides the science that drives technological development within the Department, and the High Energy and Nuclear Physics programs, which conduct fundamental research in energy, matter, and the basic forces of nature. Research in both missions is conducted by both DOE National laboratories and university researchers, and the mission includes operation, maintenance, and construction of new scientific facilities. The Fusion Energy Sciences program, which focuses on the scientific foundations that underpin the fusion process, is contained within the Energy Supply appropriation.

Program Overview

Office of Energy Research programs are funded in two separate appropriation accounts. Research in the physical and life sciences and fundamental nature of matter and energy is funded in the Science appropriation described in this section of the highlights. The Fusion Energy Sciences program, funded in the Energy Supply appropriation, conducts basic research in plasma science and alternative confinement concepts; it is discussed in another section of the highlights. The basic research and technology programs of the Department are working together to improve integration of their efforts on important energy problems.

Research is generally of a long-term, fundamental nature. The fundamental research includes providing a scientific base for future energy options, and a science base for identifying, understanding, and anticipating the long-term health and environmental consequences of energy production, development, and use. There are also several associated activities which support laboratory infrastructure management, and evaluation of DOE research programs and projects. In addition, the Office of Energy Research provides world-class scientific facilities available for merit-reviewed researchers from DOE National Laboratories, universities, and the private sector.

The High Energy and Nuclear Physics programs provide insight into the nature of energy and matter, and support large, world class scientific facilities for physics research. Research is performed primarily at DOE National Laboratories using large particle accelerators and detectors. The research is conducted by over 3,000 researchers and over 1,000 graduate students from more than 100 universities and the National Laboratories. The Department of Energy funds approximately 90 percent of all Federal research in High Energy and Nuclear Physics.

High Energy Physics seeks an understanding of the nature of matter and energy at the most fundamental level, and the basic forces which govern all processes in nature. The research program is dependent upon the DOE state-of-the-art particle accelerators, fixed target and colliding beam facilities, and particle detectors. The major facilities are the Alternating Gradient Synchrotron at Brookhaven National Laboratory, the Tevatron at Fermilab (with both fixed and colliding beam facilities), and the Stanford Linear Accelerator Center (SLAC). In December, 1997 the Department of Energy and the National Science Foundation signed an

agreement with CERN about U.S. contributions to the Large Hadron Collider (LHC) accelerator and detectors. The program also supports the technology base required to develop the advanced concepts and technologies for new high energy physics facilities.

The Nuclear Physics program conducts research activities to understand the structure of atomic nuclei and the fundamental forces required to hold nuclei together. The experimental research program supports particle accelerators and several other research facilities located at National Laboratories and universities. A Nuclear Theory program complements experimental activities. The program supports the operation and maintenance of facilities and the construction of new facilities. Construction of the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory, a colliding beam accelerator which will study nuclear matter as it undergoes a phase transition to a plasma of gluons and quarks, will be completed this year.

Biological and Environmental Research has two foci: environment and health research. Environmental activities focus on the consequences of energy production and use, risk assessment, transport of pollutants, environmental restoration and bioremediation technologies and includes a substantial climate change research program. For example, the Department continues its commitment to important scientific inquiry into the basic understanding of global climate and the carbon cycle. This year, there is expanded emphasis on carbon management science that underpins the exploration of related innovative energy futures. The program supports operation of the Environmental Molecular Sciences Laboratory. Health related programs include understanding and mitigating the potential health effects of energy development; waste cleanup; cellular, molecular and structural biology for understanding energy related health effects, and for biotechnology research; the human genome project; and, diagnostic and therapeutic medical applications of DOE technologies.

The Basic Energy Sciences program supports high quality research to develop and improve energy technologies, provide world class scientific facilities, and design and build advanced facilities for future research needs. Large National Laboratory scientific facilities, staffed by laboratory, university, and industry researchers, are used to conduct investigations in materials and chemical sciences, engineering and geosciences, and energy biosciences as well as in many other disciplines. Capital equipment and construction supports research activities at the user facilities. The program funds the operation and maintenance of these state-of-the-art scientific user facilities. Facilities include research reactors, accelerators, x-ray and ultraviolet light sources, a laser facility for combustion research, and other specialized facilities. Initial construction activity for the Spallation Neutron Source (SNS) is planned for this year; it will be a world-class state-of-the-art facility for neutron scattering and related research. This program also includes a new Climate Change Technology Initiative this year.

The Biological and Environmental Research and Basic Energy Sciences budgets request funding for a new Climate Change Technology Initiative. This initiative will enable the Nation to make significant advances in assessing and developing technologies and approaches that sequester carbon, provide energy-efficient technologies for the future, develop integrated tools for assessment, and promote low and non-carbon emitting energy sources.

The Computational and Technology Research program supports research in:

- 1) Mathematical, Information and Computational Sciences, which studies advanced computing applications and techniques, and provides high performance computer access to DOE researchers including the Next Generation Internet initiative and the DOE 2000 initiative;
- 2) Laboratory Technology Research, which funds technology research collaborations and other partnerships; and
- 3) Advanced Energy Projects, which supports promising, but not yet matured technologies.

The Office of Energy Research also supports the Multiprogram Energy Laboratories-Facilities Support program, which provides funding to support the general purpose infrastructure of the five Energy Research multiprogram laboratories; and the Energy Research Analyses program which evaluates DOE research projects.

The new University and Science Education program will support activities that utilize the scientific and technical resources of the Department to enhance the development of a diverse, well educated and scientifically literate work force. The program will provide leadership in the use and leveraging of resources of the DOE labs to help replenish the overall pool of well trained, diverse scientists and engineers of the future, and in achieving significant, long-term improvements in their scientific and technological skills.

Budget Overview

The FY 1999 request for the Office of Energy Research is \$2,718.3 million. Of this \$2,490.1 million is for the Science appropriation, and \$228.2 million for Fusion Energy Science in the Energy Supply appropriation. Superconducting Super Collider prior year funds (\$7.6 million) will be used to offset the Science request. The High Energy Physics budget funds U.S. participation in the **Large Hadron Collider**. The FY 1999 request for LHC is \$65 million; an advance appropriation of \$329 million is requested to fund DOE's participation in the LHC through the year 2004 to ensure that the U.S. will be a stable and effective partner in the international effort. DOE will design and fabricate particular subsystems of the accelerator and two large detectors. The total DOE contribution will be \$450 million, with much of this going to U.S. laboratories, universities and industry. Funding prior to FY 1999 was provided for preliminary R&D, design and engineering work as follows: FY 1996 \$6.0 million, FY 1997 \$15.0 million, FY 1998 \$35.0 million. The advance appropriation request is FY 2000 \$70.0 million, FY 2001 \$70.0 million, FY 2002 \$70.0 million, FY 2003 \$65.0 million, and FY 2004 \$54.0 million. In Nuclear Physics, funding for the **Relativistic Heavy Ion Collider (RHIC)** project will be completed, and pre-operations and operations will begin.

The budget also continues full operation of user facilities, supports environmental and life science programs (including the **U.S. Global Change Research Program** and **Human Genome**), provides for a new **Climate Change Technology Initiative**, begins construction of the **Spallation Neutron Source**, and initiates funding for the President's **Next Generation Internet initiative**. In FY 1999, a new **University and Science Education** program is initiated at a level of \$15.0 million.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Science					
High energy physics	658,170	679,693	691,000	11,307	1.7%
Nuclear physics	310,000	320,738	332,600	11,862	3.7%
Biological and environmental research	380,173	405,867	392,600	-13,267	-3.3%
Basic energy sciences	642,721	667,315	836,100	168,785	25.3%
Computational and technology research	157,238	150,576	160,640	10,064	6.7%
Energy research analyses	1,955	1,472	1,000	-472	-32.1%
Multiprogram energy labs - facility support	20,628	21,247	21,260	13	0.1%
University and science education programs	—	—	15,000	15,000	—
Program direction	40,600	37,600	39,860	2,260	6.0%
Small business innovation research (SBIR)	79,266	—	—	—	—
Subtotal, Science	2,290,751	2,284,508	2,490,060	205,552	9.0%
Use of prior year balances & other adjustments ...	-24,077	-48,800	-7,600	41,200	84.4%
Total, Science	2,266,674	2,235,708	2,482,460	246,752	11.0%
Full time equivalent employment (FTEs)	334	292	288	-4	-1.4%

FY 1999 Budget Request

High Energy Physics

The FY 1999 budget request for High Energy Physics is \$691.0 million, an increase of \$11.3 million from FY 1998. The U.S. has finalized negotiations for its involvement in the CERN **Large Hadron Collider** (LHC) project, and the program will conduct activities in accordance with the DOE/NSF December, 1997 agreement with CERN. An advance appropriation of \$329 million is requested to fund DOE participation in the project through FY 2004. Funding for the LHC increases from \$35.0 million in FY 1998 to \$65.0 million in FY 1999.

At Fermilab, construction and commissioning of the Fermi Main Injector will be completed in FY 1999, and the C-Zero Experimental Hall will also be completed. Fermilab funding increases (FY 1998 \$218.6 million; FY 1999 \$232.8 million) to support commissioning and initial operation of the Fermi Main Injector. Similarly, operating funding for SLAC increases (FY 1998 \$137.5 million; FY 1999 \$144.3 million), including funds for commissioning and initial operations of the B-factory; this and other increases are partially offset by completion of the BaBar detector for the B-factory. Funding at BNL decreases (FY 1998 \$72.3 million; FY 1999 \$56.4 million) as the AGS is transitioned to the Nuclear Physics RHIC program.

The Neutrinos at the Main Injector (NuMI) construction project continues (FY 1998 \$5.5 million; FY 1999 \$14.3 million) and the Wilson Hall Safety Improvements renovation project is initiated at \$6.7 million.

Nuclear Physics

The FY 1999 request for Nuclear Physics is \$332.6 million, an increase of \$11.9 million over FY 1998. **RHIC** construction is completed in FY 1999 (FY 1998 \$59.4 million; FY 1999 \$16.6 million); funding for RHIC preoperations/operations increases from \$19.0 million in FY 1998 to \$67.7 million in FY 1999 to support initial operations in the 4th quarter of FY 1999. The Thomas Jefferson National Laboratory (**TJNAF**) will operate for 4500 hours

and deliver continuous beam to all three experimental halls in FY 1999 (\$70.6 million). Development of new internal targets and the BLAST detector at BATES Laboratory at MIT continues in FY 1999, with limited operation of the facility. Operations and research at the Radioactive Ion Beam (RIB) facility at ORNL will continue at the FY 1998 level with additional funding provided for capital equipment to expand beam variety. Initial data collection begins at the Sudbury Neutrino Observatory. Operation of Nuclear Physics scientific user facilities will be at levels consistent with the Scientific Facilities initiative.

Biological and Environmental Research

The FY 1999 budget request for Biological and Environmental Research is \$392.6 million, a net decrease of \$ 13.3 million from FY 1998. The program anticipates ratings of “very good” or “excellent” for ninety percent of its basic research projects. The Life Sciences subprogram supports the **Human Genome** program (FY 1998 \$84.9 million; FY 1999 \$85.3 million), and expects submission of forty million subunits of human DNA sequences to public databases and satisfactory progress toward the DOE/NIH goal of sequencing all three million base sequences in the human genome by 2005. Funding will also support research to better understand the archea - the third form of life, and to increase the number of microbial genome sequences.

Funding for the Environmental Processes subprogram, which includes the Department’s high priority research supporting the **U.S. Global Change Research Program**, increases in FY 1999 (FY 1998 \$108.4 million; FY 1999 \$113.2 million) to support additional carbon dioxide R&D; and \$11 million is provided for the **Climate Change Technology Initiative**. The Environmental Remediation subprogram increases (FY 1998 \$66.3 million; FY 1999 \$67.4 million) to support the Environmental Molecular Sciences Laboratory in its second year of full operation, development of new advanced environmental remediation tools, and research activities identified in the 10-year Natural and Accelerated Bioremediation Research (NABIR) program. The Medical Applications and Measurement Sciences subprogram (FY 1998-\$66.0 million; FY 1999-\$43.9 million) funds completion of fifty Phase I/Phase II Boron Neutron Capture Therapy trials; several Congressionally directed projects were completed in FY 1998.

Basic Energy Sciences

The FY 1999 budget request for Basic Energy Sciences is \$836.1 million, a net increase of \$168.8 million over FY 1998. Funding will support continuation of ongoing research activities, and operation of all user facilities in accordance with the Scientific Facilities Initiative. Materials and Chemical Sciences will fund high-priority, peer reviewed research, while also providing support for several scientific user facilities (FY 1998 \$253.3 million; FY 1999 \$285.6 million).

The High Flux Beam Reactor will be maintained in a safe operating condition, and evaluation of options for its future will continue (FY 1998-\$22.9 million; FY 1999-\$22.9 million). Neutron research will be enhanced by upgrades at Los Alamos and Oak Ridge National Laboratories. Construction of the **Spallation Neutron Source** begins in FY 1999 at a level of \$157.0 million. The **Climate Change Technology Initiative** is funded at \$16.0 million, and will focus on energy efficient technologies, energy utilization, carbon sequestration and photosynthesis. The program also plans the start of new initiatives in Complex and Collective Phenomena which will support frontier research in complex systems, and the Partnership for Academic-Industrial Research (PAIR) which seeks to encourage interactions between basic and applied researchers in academia and industry.

Computational and Technology Research

The FY 1999 budget request for Computational and Technology Research is \$160.6 million, an increase of \$10.0 million. The Mathematical, Information and Computational Sciences (MICS) subprogram (FY 1998-\$127.2 million; FY 1999-\$141.3 million) provides \$22 million for research in support of the President's **Next Generation Internet** Initiative. This initiative will: 1) promote experimentation with the next generation of networking technologies; 2) develop a next generation network testbed to connect universities and Federal research institutions at rates that demonstrate new networking technologies and support future research; and 3) demonstrate new applications that meet important National goals and missions. The subprogram also meets the goals of the joint Energy Research/Defense Programs DOE 2000 program, and provides supercomputer access and advanced communications support to DOE researchers through the National Energy Research Scientific Supercomputing Center (NERSC), the Energy Sciences Network (ESn), and the High Performance Computing Resource Providers (HPCRP).

The Laboratory Technology Research subprogram (FY 1998-\$15.8 million; FY 1999-\$16.3 million) supports the transfer of high risk, long-term basic research to applied energy efficiency and utilization technologies. Within the Office of Energy Research, this program takes the lead for leveraging science and technology to advance understanding, and promoting U.S. economic competitiveness through cost shared partnerships with the private sector. The Advanced Energy Projects subprogram (FY 1998-\$7.6 million; FY 1999-3.0 million) supports high-risk projects with likely potential for high-payoff energy-related concepts. These projects are based on innovative ideas that span multiple scientific and technical disciplines and do not fit into any other DOE program area.

Energy Research Analyses

Funding reductions for Energy Research Analyses (FY 1998 \$1.5 million; FY 1999 \$1.0 million) will result in a ramp down of peer reviews of DOE programs. The program will evaluate the quality and relevance of research projects in Energy Research, Fossil Energy, and Energy Efficiency and Renewable Energy by independent peer reviews, and will identify additional technical needs. It also supports evaluation of critical DOE planning and policy issues by outside experts such as the National Academy of Sciences and the JASON group.

Multiprogram Energy Laboratories-Facilities Support

The FY 1999 request is maintained at \$21.3 million, the FY 1998 level. This program supports the general purpose infrastructure of Energy Research's five multiprogram National Laboratories through line-item construction funding. In FY 1999, the program will fund construction for General Purpose Facility projects (three new and completion of one on-going subproject, and continued funding for one line-item project scheduled for completion in 2001), and ES&H projects (one new and two on-going subprojects, and completion of one line-item project).

University and Science Education

The **University and Science Education** program is initiated at a level of \$15.0 million. The goal of the program is to ensure that the Department effectively utilizes and leverages the resources of its laboratory-based system to support its mathematics and science education mission. The program will fund students/faculty participating in research at DOE laboratories, with an emphasis on undergraduates. It will also increase the degree to which underrepresented populations in science and engineering can participate in DOE research, including collaborations between DOE laboratories and minority institutions. Subprograms

include Research Fellowships Participation which brings students and faculty to the National Laboratories, Education Technology which uses Internet based education technologies for students and faculty, Minority Institutional Development and Community Outreach.

Program Direction

The FY 1999 request for Energy Research Program Direction is \$39.9 million, an increase of \$2.3 million over FY 1998. This program funds personnel who staff the Biological and Environmental Research, Basic Energy Sciences, Computational and Technology Research, High Energy and Nuclear Physics programs, and support services and other related expenses. Staffing in FY 1999 is projected at 288 full time equivalents (FTEs), a reduction of 4 FTEs from FY 1998.

Highlights of Program Changes (\$ in millions)

High Energy Physics (FY 1998 \$679.7; FY 1999 \$691.0) **+\$11.3**

- ❖ **Large Hadron Collider** funding increases by +\$30.0 million to support the U.S. contribution. (FY 1998 \$35.0; FY 1999 \$65.0) **+\$30.0**
- ❖ Fermilab changes include: Commissioning and initial operation of Main Injector (+\$12.9), fabrication of CDF and D-Zero detectors (-\$11.2), capital equipment and other construction (+\$15.5). **+\$14.2**
- ❖ SLAC: Commissioning and initial operation of **B-Factor** (+\$8.3), completion of BaBar detector (-\$17.0), and capital equipment and other construction (+\$12.7). **+\$6.8**
- ❖ Brookhaven-Transfer of the AGS to the RHIC program in Nuclear Physics (-\$14.9). **-\$15.9**
- ❖ Construction (FY 1998 \$50.9; FY 1999 \$21.0). Completion of Fermi Main Injector in FY 1998 (-\$31.0); Completion of SLAC Master Substation Upgrade in FY 1998 (-\$9.4); Increased funding for NuMI at Fermilab (FY 1998 \$5.5; FY 1999 \$14.3) (+\$8.8); Complete C-Zero Experimental Hall at Fermilab in FY 1998 (-\$5.0), and initiate the Wilson Hall Safety Improvement Project at Fermilab (+\$6.7). **-\$29.9**

Nuclear Physics (FY 1998 \$320.7; FY 1999 \$332.6) **+\$11.9**

- ❖ Final year of **RHIC** construction (FY 1998 \$59.4; FY 1999 \$16.6) **-\$42.8**
- ❖ Increased funding for RHIC includes: experimental equipment (+\$2.8), RHIC preoperations (FY 1998 \$19.0; FY 1999 \$36.2) (+\$17.2), and RHIC operations which begin in the fourth quarter of FY 1999 (+\$31.5). **+\$51.7**

Biological & Environmental Research (FY 1998 \$405.9; FY 1999 \$392.6) **-\$13.3**

- ❖ Funding for the Congressionally directed projects are not included in FY 1999. **-\$31.5**
- ❖ Initiate funding for the **Climate Change Technology Initiative**; begin development of the understanding needed to enhance the sequestration and recycling of carbon through the use of natural biological processes, thus reducing levels of atmospheric carbon dioxide. **+\$11.0**
- ❖ Increase U.S. Global Change Research Program activities. **+\$4.8**

Basic Energy Sciences (FY 1998 \$667.3; FY 1999 \$836.1) **+\$168.8**

- ❖ Provide final year of construction funding for the Combustion Research Facility-II (FY 1998 \$7.0; FY 1999 \$4.0). **-\$3.0**
- ❖ Increase funding for operation of major scientific user facilities. **+\$3.7**

❖	Initiate funding for the Climate Change Technology Initiative to include science for efficient technologies, low-carbon science, and sequestration science.	+\$16.0
❖	Funding for the design of the Spallation Neutron Source (SNS) is increased from FY 1998 \$23.0 million to FY 1999 \$28.6 million.	+\$5.6
❖	Initiate construction of the Spallation Neutron Source (TEC \$1,138,800).	+\$128.4
Computational & Technology Research (FY 1998 \$150.6; FY 1999 \$160.6)		+\$10.0
❖	Initiate funding for the Next Generation Internet Initiative.	+\$22.0
❖	Redirect funding for the High Performance Computing Resource Providers to the Next Generation Internet initiative.	-\$7.7
❖	Ramp down the Advanced Energy Projects program.	-\$4.6
University and Science Education (FY 1998 \$0.0; FY 1999 \$15.0)		+\$15.0
❖	The University and Science Education Program is initiated to ensure the effective utilization of DOE's laboratories in support of the Department's mathematics and science education mission.	+\$15.0
Program Direction (FY 1998 \$37.6; FY 1999 \$39.9)		+\$2.3
❖	Increase in salaries and benefits due to impact of general pay increases, promotions, and within-grade increases, partially offset by decrease of 4 FTEs.	+\$1.4
❖	Consolidation of all support services into Program Direction; network infrastructure technology upgrades; and increased Working Capital Funds costs.	+\$0.9

Departmental Administration

Mission

The offices funded under the Departmental Administration appropriation account provide headquarters guidance and support benefitting all operating elements of the Department in such areas as human resources, administration, accounting, budgeting, legal services, information management systems, life cycle asset management, workforce diversity, policy, congressional liaison, and public affairs. Their mission is to provide internal and external customers with timely, quality service which facilitates achievement of DOE's goals.

Program Overview

Organizations supported in this appropriation include the Office of the Secretary; Human Resources and Administration; Chief Financial Officer; Field Management; Congressional and Intergovernmental Affairs; Public Affairs; General Counsel; Policy; Economic Impact and Diversity; and the Board of Contract Appeals. In addition, the account budgets for the Cost of Work for Others, which provides for the cost of products and services provided by DOE's laboratories and other contractors to non-departmental users. Finally, this account also receives offsetting revenues for the goods and services associated with the Cost of Work for Others program as well as miscellaneous revenues from a variety of other sources.

Budget Overview

The Department is proposing a new \$2.4 million initiative that will provide for upgrades and improvements to our outdated information technology infrastructure and will also complement the Corporate Management Information initiative which began in FY 1998. Specifically,

funds for this initiative will permit the Department to make physical improvements in telecommunications (both telephone and Local Area Network) infrastructure; provide for expanded connectivity/interoperability throughout the DOE complex; fully implement the Strategic Information Management program; and implement information architecture standards. These improvements are critical and will help create the necessary platform to permit the Department to take full and immediate advantage of the new corporate systems coming on-line and other technology improvements resulting from the Corporate Management Information Program.

In addition, the Department will continue funding for the Corporate Management Information Program which supports National Performance Review objectives and the requirements of the Department's Strategic Alignment Initiative. Through this investment, the Department will maximize its investment by streamlining information and financial systems by cooperatively

Departmental Administration (dollars in millions)			
	FY 1998 Estimated Obligations	FY 1999 Request	Difference
Office of the Secretary . . .	4.1	4.3	+0.2
Personnel Compensation & Benefits	104.0	106.2	+2.2
Other Expenses	76.6	77.6	+1.0
Program Support	11.2	13.4	+2.2
Total, Administrative Operations	195.9	201.5	+5.6
Cost of Work for Others . .	34.6	44.3	+9.7
Total Obligations: . . .	230.5	245.8	+15.3
Adjustments	-11.8	—	-11.8
Total gross appropriation	218.7	245.8	+27.1
Revenues	-131.3	-136.5	-5.2

developing an automated, technology-based system. Specifically, the \$8.0 million in FY 1999 will fully implement planned enhancements of personnel management and state-of-the-art management information systems.

In support of the Department's overall mission, the Departmental Administration account provides funding for ten, main Department-wide management organizations. The primary functions of these organizations encompass such diverse activities as policy and planning, finance and personnel, legal and procurement, life cycle asset management, information management systems, data processing, congressional and public liaison, civil rights, training, and management of Working Capital Fund activities. The total on-board head count projected for FY 1999 is 1,300 and reflects a 32 percent decrease from the original FY 1995 baseline of 1,920, including the Office of the Secretary. This decrease is in line with the Department's Strategic Alignment Initiative. Additionally, Departmental Administration provides for programmatic activities such as energy and environmental policy studies, minority education, business/community support and assistance, and Department-wide technical training development.

	FY 1997 Actual Obligations	FY 1998 Estimated Obligations	FY 1999 Request	FY 1999 vs. FY 1998	
Departmental Administration					
Administrative operations					
Office of the Secretary	2,447	4,123	4,251	128	3.1%
Human resources and administration	103,409	107,709	111,378	3,669	3.4%
Chief financial officer	23,190	22,067	22,200	133	0.6%
Field management	6,969	8,235	7,926	-309	-3.8%
Board of contract appeals	768	704	722	18	2.6%
Congressional and intergovernmental affairs . .	5,162	4,918	5,130	212	4.3%
Public affairs	3,309	3,596	3,850	254	7.1%
General counsel	18,629	19,993	20,871	878	4.4%
Policy	19,611	18,160	18,449	289	1.6%
Economic impact and diversity	6,108	6,408	6,699	291	4.5%
Total, Administrative operations	189,602	195,913	201,476	5,563	2.8%
Cost of work for others	27,492	34,584	44,312	9,728	28.1%
Subtotal, Departmental Administration (gross)	217,094	230,497	245,788	15,291	6.6%
Use of prior year balances & other adjustments . . .	-2,077	-11,750	—	11,750	100.0%
Total, Departmental administration (gross)	215,017	218,747	245,788		
Miscellaneous revenues					
Revenues associated with cost of work	-28,590	-35,514	-46,614	-11,100	-31.3%
Other revenues	-56,407	-95,816	-89,916	5,900	6.2%
Total, Miscellaneous revenues	-84,997	-131,330	-136,530	-5,200	-4.0%
Full time equivalent employment (FTEs)	1,358	1,300	1,300	—	—

US Department of Energy
Departmental Administration
FY 1997 Through FY 1999 Manpower

	FY 1997 Actual FTEs	FY 1997 * SAI	FY 1997 * Actual Headcount	FY 1998 Projected FTEs	FY 1998 * SAI	FY 1998 * Projected Headcount	FY 1999 Request FTEs	FY 1999 * SAI	FY 1999 * Projected Headcount
Office of the Secretary 1_/	22	23	24	37	37	37	37	37	37
General Counsel	158	178	155	171	176	171	171	171	171
Congressional & Public Affairs	71	94	65	0	66	0	0	0	0
Congressional & International Affairs	0	0	0	39	0	39	39	39	39
Public Affairs	0	0	0	30	0	30	30	30	30
Board of Contract Appeals	5	6	5	5	5	5	5	5	5
Office of Policy	130	172	119	114	121	114	114	114	114
Economic Impact & Diversity	44	47	43	44	42	44	44	44	44
Chief Financial Officer	215	250	208	209	205	209	209	209	209
Human Resources & Administration	662	758	629	606	635	606	606	606	606
Field Management	51	66	47	45	47	45	45	45	45
Subtotal, Dept. Administration	1,336	1,571	1,271	1,263	1,297	1,263	1,263	1,263	1,263
Grand Total, Dept. Administration	1,358	1,594	1,295	1,300	1,334	1,300	1,300	1,300	1,300

* This reflects End Of Year Headcount

1_/ Includes all Office of The Secretary of Energy personnel (including detailees from other programs starting in FY 1998).

FY 1999 Budget Request

The FY 1999 request provides \$106.2 million for related salary and benefit expenses for 1,263 full-time equivalent employees, excluding the Office of the Secretary. The request also includes travel funding of \$3.1 million. Funding for contractual services and program support are \$74.5 million and \$13.4 million, respectively. Examples of significant program support activities are: efforts to advance U.S. policies to facilitate U.S. private sector investment; analyze and assess emerging clean air issues as they impact the Administration's global climate change effort; support the Department's corporate information management system; public service announcements; news wire service; minority education/business community support and assistance; and DOE technical training development. Finally, the request also includes \$4.3 million for the Office of the Secretary to support 37 full-time equivalent employees.

Working Capital Fund FY 1999 Activities	
Building Rent & Operations . .	55,756
Telephone Services	6,685
Postage	2,130
Printing and Graphics	4,115
Supplies	2,492
Copiers	2,369
Contract Closeouts	556
Desktop	1,528
Payroll and Personnel	2,054
Networking	3,055
Total	80,740

Working Capital Fund

The Working Capital Fund finances business-type activities to: ensure that program mission budgets include a fair allocation of the costs of common administrative services; improve the efficiency of administrative services by providing managers with the opportunity and responsibility to make choices on the amount, priority, and, where possible, the sources of administrative services used by their programs; and expand the flexibility of the Department's budget structure to permit service providers to respond to customer needs. The Working Capital Fund Board composed of eleven members and chaired by the Assistant Secretary for Human Resources and Administration has adopted specific pricing policies for the various business

lines. For example, in FY 1998, contract audit services were removed from the fund while payroll processing was added. The FY 1999 budget assumes continuation of the FY 1998 pricing policies.

Cost of Work for Others

The budget request of \$44.3 million provides for the cost of products and services provided by the field offices and National laboratories for non-DOE users. Work results from revenue programs related to DOE's mission or its reimbursable work for state and local entities which are precluded by law from making advance payments. Costs are offset with revenues received from the sale of products or services. Examples of proposed FY 1999 revenue generating products or services are timber sales, utility sales, seismic monitoring, and research and development activities conducted for state and local governments. The request also includes \$15.6 million to cover costs associated with the acceptance, storage and management of foreign reactor spent fuel, which is offset by revenues on a dollar for dollar basis.

Revenues

Revenue estimates of \$46.6 million are associated with the Cost of Work for Others program and support the products and services described above. Miscellaneous revenues of \$89.9 million are derived from the sale of by-products that have no costs associated with the Departmental Administration appropriation, but which offset the appropriation. Examples are: lease of Oak Ridge Operations facilities (Gaseous Diffusion Plant) by the U.S. Enrichment Corporation, handling and basin storage of spent fuel cores from Navy ships, residual material (uranium) in the spent fuel cores, and added factor and depreciation from the DOE Reimbursable Work for Others program.

Highlights of Program Changes (dollars in millions)

Office of Secretary (FY 1998 \$4.1; FY 1999 \$4.3) **+\$0.2**

Increase is due to a cost of living adjustment.

General Management (FY 1998 \$104.0; FY 1999 \$106.2) **+\$2.2**

Personnel compensation and benefits increases due to a cost of living adjustment (\$4.0). This increase is offset by decreases due to the elimination of costs associated with a voluntary separation program and the \$80 per person VSIP charge (\$1.8).

Other Expenses (FY 1998 \$76.6; FY 1999 \$77.6) **+\$1.0**

Increase is due to upgrades to the information technology infrastructure (FY 1998 \$3.5; FY 1999 \$5.9 +\$2.4), and an increase to General Counsel's LAN support (\$.2), offset by decreases in the Working Capital Fund costs due to efficiencies achieved such as fewer telephone lines and reduction in supplies (\$1.6).

Program Support (FY 1998 \$11.2; FY 1999 \$13.4) **+\$2.2**

Increase is due to growth in the Corporate Management Information Program (FY 1998 \$6.0; FY 1999 \$8.0 +\$2.0) and various other net increases (\$.2).

Cost of Work (FY 1998 \$34.6; FY 1999 \$44.3) **+\$9.7**

Overall increase results primarily from an increase in the work associated with the storage and management of Foreign Research Reactor Spent Fuel (FY 1998 \$4.0; FY 1999 \$15.6 +\$11.1). Note: This increase is offset by the revenues the work will generate.

Revenues (FY 1998 -\$131.3; FY 1999 -\$136.5)**-\$5.2**

Revenue decrease is comprised of an increase to revenues associated with Cost of Work for Others primarily due to spent fuel activities (FY 1998 -\$4.0; FY 1999 -\$15.6 -\$11.1); offset by decreases in revenues from the Department of the Navy (\$7.3) and a significant decrease in Work for Others revenues associated with added factor and depreciation (\$2.4). (Miscellaneous Revenues FY 1998 -\$95.8; FY 1999 -\$89.9). (Cost of Work Revenues FY 1998 -\$35.5; FY 1999 -\$46.6).

Office of the Inspector General

Mission

Major statutory responsibilities of the Office of Inspector General (OIG) as stated in section 4 of the Inspector General Act of 1978, as amended, 5 U.S.C. App.3, are to detect and prevent fraud, abuse, and violations of law and to promote economy, efficiency, and effectiveness in the operations of the Department of Energy (DOE). In addition, Congress has directed the OIG to assume other responsibilities, such as financial statement audits, investigation of certain reprisal complaints of contractor employees, and audit of the Department's Working Capital Fund.

Program Overview

The OIG promotes economy and efficiency in DOE programs through audits, inspections, investigations, and other reviews. Major areas of audit concentration include the Department's national laboratory system (which accounts for about \$6 billion in annual obligations), environmental remediation activities (\$6 billion), and defense programs. Further, the OIG has been successful in pursuing both criminal and administrative allegations of activities associated with DOE programs. The OIG's actions in identifying attainable economies and efficiencies in Departmental operations have recently provided a positive monetary impact of approximately \$3.2 million per audit FTE per year.

Budget Overview

The FY 1999 budget request for the Office of the Inspector General focuses resources on implementing the requirements of the Chief Financial Officers (CFO) Act of 1990 and the Government Management Reform Act (GMRA) of 1994. Implementation of the CFO Act requires the submission of financial statements to the Director of the Office of Management and Budget for each Departmental revolving fund and trust fund, as well as activities which performed substantial commercial functions. The GMRA expanded the provisions of the CFO Act by requiring the OIG to audit financial statements covering all accounts and associated activities of the Department and submit them to the Office of Management and Budget annually. Additional programmatic requirements which have recently been imposed on the OIG include appropriations language creating the Department's Working Capital Fund (began in FY 1997), which requires an annual OIG audit of the Fund; an OMB circular which requires the OIG to audit the Department's value engineering program; and the requirement to investigate certain contractor employee whistleblower reprisal complaints. These requirements, in combination with reduced resources, have required the OIG to divert resources from important other projects.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Office Of Inspector General					
Office of inspector general	24,750	27,500	29,500	2,000	7.3%
Use of prior year balances	-897	—	—	—	—
Total, Office Of Inspector General	23,853	27,500	29,500	2,000	7.3%
Full time equivalent employment (FTEs)	291	273	266	-7	-2.6%

FY 1999 Budget Request

The FY 1999 budget request for the OIG is \$29.5 million for the salaries, benefits, travel and support services associated with 266 FTEs.

Performance objectives for FY 1999 activities include the completion of financial statement audits and the rendering of an annual opinion on the Department's consolidated financial statements. The OIG will also strive to complete at least 60 percent of the audits planned for the year and replace those audits not started with more significant audits which identify time-sensitive issues needing review. Audit areas in FY 1999 will include the Department's efforts in contract administration, environmental programs, implementation of performance based contracting, realignment initiatives, work force restructuring, economic development, and reviews of key programs identifying areas with weaknesses or problems where resources are at risk. Investigations will be focused on allegations of serious violations of Federal law, with the goal of obtaining acceptance of 75 percent of the cases presented for prosecution.

In FY 1999, the OIG will strive to achieve an 85 percent acceptance/adoption rate on recommendations made in audit reports, performance review reports, intelligence oversight review reports and allegation-based inspection reports, thereby allowing DOE managers to take corrective, cost saving, recoupment or disciplinary action(s).

Highlights of Program Changes (\$ in millions)

Office of the Inspector General (FY 1998 \$27.5; FY 1999 \$29.5) **+\$2.0**

The FY 1999 increase of \$2.0 is needed to fund the authorized staffing level (approximately 15 FTEs above the fundable FY 1998 level of 251) and increase contractor resources to enable the OIG to begin to address the backlog of critical workload which has developed due to the situation described in the Budget Overview.

Weapons Activities

Mission

The mission of Defense Programs is to maintain the safety, security, and reliability of the Nation's enduring nuclear weapons stockpile under a Comprehensive Test Ban Treaty, utilizing a science-based approach within a smaller, more efficient weapons complex infrastructure. The weapons complex relies on scientific understanding and expert judgement, rather than on underground nuclear testing and the development of new weapons, to predict, identify and correct problems affecting the safety and reliability of the stockpile. Enhanced experimental capabilities and new tools in computation, surveillance, and advanced manufacturing are necessary to recertify weapon safety, performance, and reliability without underground nuclear testing. Weapons will be maintained, modified, or retired and dismantled as needed to meet arms control objectives or remediate potential safety and reliability issues.

Program Overview

There are four national security objectives in the DOE Strategic Plan upon which this budget request is based: 1) maintain confidence in the safety, reliability and performance of the nuclear weapon stockpile without nuclear testing; 2) replace nuclear testing with a science-based stockpile stewardship program; 3) ensure the vitality of DOE's national security enterprise; and 4) reduce nuclear weapon stockpiles and the proliferation threat caused by the possible diversion of nuclear materials.

The following high level performance measures support the National Security objectives for Defense Programs: certifying the nuclear weapons stockpile safety, reliability, and performance according to DOE/Department of Defense (DoD) procedures; meeting all DoD annual weapons alteration, modification, and surveillance schedules; beginning the implementation of the dual-path option decision to provide a reliable source of tritium as required for the nuclear weapons stockpile; completing the installation of one three trillion operations per second system; conducting three to four subcritical experiments at the Nevada Test Site to provide valuable scientific information about the behavior of nuclear materials during the implosion phase of a nuclear weapon; ensuring that the capability to resume underground testing is maintained in accordance with the Presidential direction through a combined experimental and test readiness program; maintaining robust emergency response assets in accordance with Presidential direction to ensure Departmental response to any nuclear weapons or radiological emergency in the United States or abroad; and adhering to schedules for the safe and secure dismantlement of approximately 500 nuclear warheads that have been removed from the U.S. nuclear weapons stockpile.

The Defense Programs budget request is comprised of three decision units: Stockpile Stewardship, Stockpile Management, and Program Direction.

The Stockpile Stewardship decision unit funds activities to maintain confidence in stockpile safety and reliability without nuclear testing through a technically challenging science-based program utilizing upgraded or new experimental, computational and simulation capabilities. These programs are planned to meet the infrastructure requirements contained in the Nuclear Posture Review. They continue with major initiatives in high energy density research with

lasers and accelerated research and development in advanced computations to acquire and use data to improve predictive capabilities, which will be the foundation of the science-based approach. The Accelerated Strategic Computing Initiative (ASCI), a discrete element within the Stockpile Stewardship program, provides the leading-edge, high end simulation capabilities needed to meet weapons assessment and certification requirements without nuclear testing. To accomplish this, ASCI integrates the resources of the national laboratories, computer manufacturers, and academia. Major new experimental facilities are also planned to expand and enhance the scientific and engineering base for stockpile stewardship, and to assure that Defense Programs can continue to attract and retain the high quality personnel needed to make the scientific and technical judgements related to the safety and reliability of the stockpile in the absence of nuclear testing.

The Stockpile Management decision unit provides funding to continue historical responsibilities to provide near term and long range support for the enduring stockpile, and for ensuring an adequate supply of tritium. Along with stockpile surveillance this includes normal maintenance, corrective maintenance and system refurbishment, as well as weapon dismantlement. The Stockpile Management decision unit funds initiatives in enhanced surveillance and advanced manufacturing, as well as the Stockpile Management Restructuring Initiative projects to downsize production capabilities needed for the future. The activities are supportive of the infrastructure requirements cited in the Nuclear Posture Review. The DOE has also completed a Programmatic Environmental Impact Statement (PEIS) for tritium production, and has pursued a dual-track approach to research, development and engineering needed to enable a decision in 1998 to select a primary and backup production method.

Budget Overview

The Defense Programs request for FY 1999 is \$4.5 billion. Overall, the Defense Programs request represents an increase of \$353.3 million or 8.5 percent above the FY 1998 appropriation. The Stockpile Stewardship account includes the largest increase, 17.8 percent, driven by ASCI, the construction funding schedule for the National Ignition Facility (NIF), and the transfer of funding associated with Waste Management activities at the Los Alamos and Sandia National Laboratories.

The FY 1999 request supports full implementation of the Stockpile Stewardship and Management Plan. Within the Stockpile Stewardship account, research and development efforts will continue on the near and long term requirements of the nuclear weapons stockpile. In particular, efforts will be placed on providing new methods for assessing, manufacturing, and certifying weapons components and systems without the use of underground nuclear testing. The Stockpile Management account will continue ongoing activities required to manage the stockpile, and will support the current Stockpile Plan, related dismantlement schedules, and Limited Life Component Exchange (LLCE) schedules.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Weapons Activities					
Stockpile stewardship	1,660,167	1,858,213	2,188,375	330,162	17.8%
Stockpile management	1,928,876	2,041,087	2,051,125	10,038	0.5%
Program direction	325,600	250,000	260,500	10,500	4.2%
Subtotal, Weapons activities	3,914,643	4,149,300	4,500,000	350,700	8.5%
Use of prior year balances & other adjustments ...	-3,445	-2,608	—	2,608	100.0%
Total, Weapons Activities	3,911,198	4,146,692	4,500,000	353,308	8.5%
Full time equivalent employment (FTEs)	1,966	1,891	1,878	-13	-0.7%

FY 1999 Budget Request

The Stockpile Stewardship decision unit requests \$2,188.4 million in FY 1999, an increase of \$330.2 million or 17.8 percent above the FY 1998 appropriation. The request includes continued funding for the physical and intellectual infrastructure at the weapons laboratories and the Nevada Test Site, and provides the scientific and engineering tools needed to ensure the safety, reliability, and performance of the nuclear weapon stockpile without nuclear testing. In addition, funding is continued for several initiatives undertaken to support the science-based Stockpile Stewardship program. The Accelerated Strategic Computing Initiative (**ASCI**) will continue to accelerate the development of highly complex nuclear weapons simulation codes and work with industrial partners on advanced computer platforms, and computing environments and infrastructure (\$330.9 million). Funding for the National Ignition Facility (**NIF**), another key element of the science-based Stockpile Stewardship program, is continued (operation and maintenance \$6.8 million; construction \$284.2 million). The **Technology Partnerships** request (\$60.0 million) will continue to focus resources on the highest priority partnerships supporting the National Security mission including advanced manufacturing, as well as supporting the initiatives of the American Textiles Partnership (**AMTEX**) and the Advanced Computational Technology Initiative (**ACTI**). The request also includes \$9.0 million for the **Education** program.

The Stockpile Management decision unit requests \$2,051.1 million in FY 1999, an increase of \$10.0 million or 0.5 percent above the FY 1998 appropriation. The Core Stockpile Management Program (\$1,664.7 million) will maintain, evaluate, modify, improve, and dismantle weapons in accordance with the nuclear weapons stockpile plan. The Enhanced Surveillance initiative will continue to develop tools, techniques, and models for measuring, qualifying, calculating, and predicting the effects of aging on weapons materials and components and understanding these effects as they impact weapons safety and reliability (\$67.3 million). The **Advanced Manufacturing, Design and Production Technologies** program will focus on re-engineering and modernizing the weapons complex into a modern, agile, and fully integrated operation capable of responding to a wide range of production requirements (\$62.6 million). The **Radiological/Nuclear Accident Response** program request is \$77.6 million, including funds to support additional training for first responders to weapons of mass destruction incidents and additional start-up and equipment for rapid response. The budget request is intended to develop a new source of tritium to meet the requirements of the enduring stockpile. For FY 1999, the budget request includes **\$157.0 million** for the **tritium programs** and assumes a decision on the primary and backup

technology in 1998. In FY 1999, the responsibility for materials surveillance at former Defense Programs facilities is transferred to Environmental Management (-\$39.5 million), leaving a Defense Programs request for materials at current Defense Programs facilities of \$21.9 million.

For the Program Direction decision unit, the budget requests \$260.5 million in FY 1999, an increase of \$10.5 million or 4.2 percent above the FY 1998 appropriation. Initiatives to reengineer the federal workforce will continue.

Highlights of Program Changes (\$ in millions)

Stockpile Stewardship (FY 1998 \$1,858.2; FY 1999 \$2,188.4) +\$330.2

The budget request for the Stockpile Stewardship decision unit increases by \$330.2 from FY 1998 to FY 1999. The changes in the Core Stockpile Stewardship, Inertial Confinement Fusion, and Technology Partnerships/Education programs are described below.

Core Stockpile Stewardship (FY 1998 \$1,379.9; FY 1999 \$1,621.4) +\$241.5

- ❖ Conducts research and technology development activities at the weapons laboratories and the Nevada Test Site needed to assure our ability to certify confidence in the nuclear weapons stockpile under a Comprehensive Test Ban Treaty; emphasis is on advanced physics and engineering research. (FY 1998 \$907.0; FY 1999 \$928.0) +21.0
- ❖ Accelerated Strategic Computing Initiative (ASCI) will continue the development of simulation codes, computer platforms and computing environments needed to address the challenges of credibly simulating the performance, safety, and reliability of the enduring nuclear stockpile. FY 1999 efforts will include initiation of the 10-TeraOps computer procurement; and Distributed Computing at a Distance and the Validation and Verification initiatives--the tools, data and methodologies to ensure that high-end simulation capabilities reflect and predict the real world. The ASCI program serves as one of the cornerstones of the Stockpile Stewardship program in the absence of underground testing. (FY 1998 \$223.5; FY 1999 \$329.1) +105.6
- ❖ Continues laboratory stockpile computing activities and begins to develop a local computational environment for weapons scientists to use high-end simulation capabilities using data generated by the ASCI codes and computers to address time-sensitive stockpile issues. (FY 1998 \$150.6; FY 1999 \$186.9) +36.3
- ❖ Construction - supports four new infrastructure line items, three new programmatic line items, and continues ongoing projects. (FY 1998 \$98.8; FY 1999 \$115.5) +16.7
- ❖ Transfers responsibility and funding from Environmental Management for Waste Management activities at the Los Alamos and Sandia National Laboratories. (FY 1998 \$0.0; FY 1999 \$61.9) +61.9

Inertial Confinement Fusion (ICF) (FY 1998 \$413.5; FY 1999 \$498.0) +\$84.5

- ❖ The operation and maintenance funds (Other Project Cost funding) associated with the National Ignition Facility (NIF), decrease in line with the project's outyear plan. (FY 1998 \$31.3; FY 1999 \$6.8) -24.5
- ❖ Construction funds associated with the NIF increase in line with the project's outyear plan. (FY 1998 \$197.8; FY 1999 \$284.2) +86.4
- ❖ The operation and maintenance funds for the Inertial Confinement Fusion (ICF) base program are increased primarily to support NIF optics pilot production and preparations for NIF operation. (FY 1998 \$184.4; FY 1999 \$207.0) +22.6

Technology Partnerships/Education (FY 1998 \$64.8; FY 1999 \$69.0)	+\$4.2
Continues Technology Partnerships at approximately the FY 1998 level of effort.	+4.2
Stockpile Management (FY 1998 \$2,041.1; FY 1999 \$2,051.1)	+\$10.0
The budget request for the Stockpile Management decision unit increases by \$10.0 from FY 1998 to FY 1999. This is a result of changes throughout the Stockpile Management programs as described below.	
Core Stockpile Management (FY 1998 \$1,520.7; FY 1999 \$1,664.7)	+\$144.0
❖ Provide for limited life component exchange at START I level. (FY 1998 \$0.0; FY 1999 \$25.9)	+25.9
❖ Expand the Stockpile Management Restructuring Initiative (SMRI), initiated at two plants in FY 1998, to all four plants. (FY 1998 \$32.3; FY 1999 \$80.7)	+48.4
❖ Reestablish pit production capability and improve plutonium handling infrastructure at LANL. (FY 1998 \$35.4; FY 1999 \$94.3)	+58.9
❖ Transfers responsibility and funding from Environmental Management for Waste Management activities at Pantex. (FY 1998 \$0.0; FY 1999 \$10.8)	+10.8
Enhanced Surveillance (FY 1998 \$46.1; FY 1999 \$67.3)	+\$21.2
❖ Funds essential tasks in organics and dynamics, nonnuclear components and plutonium experiments. Provides diagnostic tools for stockpile evaluation.	
Advanced Manufacturing, Design and Production Technologies (FY 1998 \$73.3; FY 1999 \$62.6)	-\$10.7
❖ Continued support of the Advanced Manufacturing, Design and Production Technologies initiative.	
Radiological/Nuclear Accident Response (FY 1998 \$78.8; FY 1999 \$77.6)	-\$1.2
❖ Although overall program slightly decreases, supports additional funding for training of first responders to weapons of mass destruction incidents and additional start-up and equipment for rapid response.	
Tritium Source (FY 1998 \$260.8; FY 1999 \$157.0)	-\$103.8
❖ Assumes a decision on a primary and backup technology in 1998.	
Materials (FY 1998 \$61.4; FY 1999 \$21.9)	-\$39.5
❖ Transfers responsibility for Materials Surveillance at former Defense Programs facilities to Environmental Management.	
Program Direction (FY 1998 \$250.0; FY 1999 \$260.5)	+\$10.5
❖ Transfers funding and 18 FTEs from Environmental Management for federal employees in the field associated with the transfer of waste management activities. (FY 1998 \$0.0; FY 1999 \$1.5)	+1.5
❖ Supports FY 1999 SAI target staffing levels, after adjusting for use of carryover balances in FY 1998 per Congressional report language. (FY 1998 FTEs 1,891; FY 1999 FTEs 1,878—includes 18 FTEs transferred from Environmental Management)	+9.0

Other Defense Activities

The Other Defense Activities appropriations account includes a variety of defense-related programs managed by different organizations. The Offices of Nonproliferation and National Security, Worker and Community Transition, Fissile Materials Control and Disposition, and Naval Reactors are funded completely by this appropriation. In addition, this account provides funding for national security related activities of the offices of Environment, Safety and Health, Nuclear Energy, and Hearings and Appeals.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Other Defense Activities					
Nonproliferation and national security	627,295	658,300	696,300	38,000	5.8%
Worker and community transition	62,500	61,159	45,000	-16,159	-26.4%
Fissile materials control and disposition	103,796	103,796	168,960	65,164	62.8%
Environment, safety & health	71,366	78,769	74,000	-4,769	-6.1%
Office of hearings and appeals	1,840	2,300	2,400	100	4.3%
Nuclear Energy	84,500	35,000	35,000	—	—
Independent assessment of DOE projects	—	35,000	—	-35,000	-100.0%
Naval reactors	681,932	670,500	665,500	-5,000	-0.7%
Subtotal, Other defense activities	1,633,229	1,644,824	1,687,160	42,336	2.6%
Use of prior year balances & other adjustments . . .	-3,767	-6,047	-20,000	-13,953	-230.7%
Total, Other Defense Activities	1,629,462	1,638,777	1,667,160	28,383	1.7%
Full time equivalent employment (FTEs)	710	734	720	-14	-1.9%

Nonproliferation and National Security

Mission

To reduce the danger to U.S. National Security posed by Weapons of Mass Destruction (WMD) by preventing the spread of WMD materials, technology, and expertise; detecting the proliferation of WMD worldwide; reversing the proliferation of nuclear weapons capabilities; and responding to WMD emergencies.

Program Overview

The arms control and nonproliferation program pursues the following major priorities: 1) secure nuclear materials and expertise in Russia and the Newly Independent States; 2) Limit weapons-usable fissile materials; 3) establish transparent and irreversible nuclear reductions; 4) strengthen the nuclear nonproliferation regime; and 5) control nuclear exports. The last several years have seen dramatic growth of cooperation programs between U.S. national

laboratory experts and their Former Soviet Union counterparts to improve materials protection, control and accountability in the Former Soviet Union.

The President has made nonproliferation one of the Nation's highest priorities. The Department of Energy is the preeminent United States agency providing technological and analytical support to international efforts to prevent the proliferation of Weapons of Mass Destruction.

Stable long-term research and technology development and unique science and technology competencies must be maintained to support increasing demands in such critical areas as arms control, nonproliferation, intelligence, domestic nuclear safeguards and security, energy security, and emergency management. Current research and development efforts include the design, development, and production of operational sensor systems needed for early detection, treaty monitoring, nuclear weapon and chemical and biological weapon proliferation detection, nuclear warhead dismantlement initiatives, and intelligence activities.

Increased safeguards and security technical support will need to be provided to field elements in light of increasing demands on facilities from the implementation of arms control accords as well as the continued requirement for more cost-efficient and effective security. Compliance with automatic declassification of Executive Order 12958 will require the Department to thoroughly review documents which may be marked as containing only National Security Information, but which also may contain unmarked Restricted Data and Formerly Restricted Data concerning nuclear weapons design and the military utilization of nuclear weapons. If this review is not done, such documents could be inadvertently released under the automatic declassification provisions of the Executive Order.

Budget Overview

As international cooperation increases with the NIS, additional budgetary resources are required to expedite the expansion and enhancement of NIS nonproliferation activities in critical areas such as plutonium and highly enriched uranium transparency issues, nuclear materials protection, control and accounting, export control, and preventing the spread of Weapons of Mass Destruction (WMD) technology and expertise. The FY 1999 Nonproliferation and National Security budget request increases to \$676.3 million, providing additional budgetary resources for urgently required nonproliferation activities in the NIS as well as increased resources to stem the proliferation of chemical and biological weapons and to reduce the danger of nuclear smuggling and the associated potential for nuclear terrorism.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Nonproliferation and national security					
Verification and control technology					
Nonproliferation and verification R&D	206,677	210,000	210,000	—	—
Arms control	216,244	234,600	256,900	22,300	9.5%
Intelligence	30,857	33,600	33,600	—	—
Total, Verification and control technology	453,778	478,200	500,500	22,300	4.7%
Nuclear safeguards and security	47,208	47,200	53,200	6,000	12.7%
Security investigations	20,000	30,000	30,000	—	—
Emergency management	20,027	20,000	23,700	3,700	18.5%
Program direction	86,282	82,900	88,900	6,000	7.2%
Subtotal, Nonproliferation and national security	627,295	658,300	696,300	38,000	5.8%
Use of prior year balances	—	-1,163	—	1,163	100.0%
Offset to user organizations	—	—	-20,000	-20,000	—
Total, Nonproliferation and national security	627,295	657,137	676,300	19,163	2.9%
Full time equivalent employment (FTEs)	419	410	395	-15	-3.7%

FY 1999 Budget Request

The FY 1999 Other Defense Activities budget request for the Office of Nonproliferation and National Security is \$676.3 million, a \$19.2 million increase over FY 1998, primarily due to an increase for Arms Control and WMD Nonproliferation Activities.

Nonproliferation and Verification Research and Development

This program applies unique science and technology development capabilities at the Department's National Laboratories to reduce the threat to U.S. National Security posed by WMD. This program's FY 1999 budget request of \$210 million continues current research and development activities to provide the technology and tools to assist in arms control treaty monitoring (including improving the ability to monitor the Comprehensive Test Ban Treaty), technical intelligence collection and processing technologies, and the technologies to detect the proliferation of WMD as well as the diversion of WMD materials. The research and development program maintains responsibility for all Comprehensive Test Ban research and development for underground, underwater, atmospheric, and space nuclear detonation detection. The FY 1999 Request also includes \$19.0 million for the chemical and biological weapons detection initiative and \$7.0 million for the enhanced **nuclear smuggling/terrorism initiative**.

Arms Control

The Arms Control program's FY 1999 budget request of \$256.9 million increases our efforts to implement nonproliferation activities within the NIS to improve materials protection, control and accountability by expanding cooperation with Russia and the NIS at every facility where at risk weapons-usable nuclear materials are stored and to which they are transported; preventing the spread of WMD expertise; assisting former Soviet republics in establishing and enhancing nuclear material export control systems by increasing laboratory-to-laboratory initiatives to engage former Soviet Union scientists in the export control process; providing

technical support for long-term monitoring of Iraqi facilities and other nuclear safeguards and emergency programs of the International Atomic Energy Agency (IAEA) and improving IAEA safeguards effectiveness and efficiency for IAEA inspections; limiting weapons-usable fissile materials worldwide by converting additional highly enriched uranium fueled reactors to low enriched uranium; and establishing transparent and irreversible nuclear reductions by fully implementing transparency measures and U.S. rights at all Russian facilities engaged in activities associated with the U.S.-Russian HEU Purchase Agreement.

The Arms Control program includes critical analytical, technical expertise, and operational support in the following areas: \$2.0 million for spent fuel activities with the Democratic Peoples Republic of Korea (North Korea); \$15.0 million for spent fuel activities in Kazakhstan; \$15.0 million for the **Initiatives for Proliferation Prevention Program**; \$152.0 million for **Materials Protection, Control and Accounting**; and funding for implementing the Nuclear Nonproliferation Treaty; Comprehensive Test Ban Treaty; Fissile Material Cutoff Treaty negotiations; Biological Weapons Convention; IAEA inspection of excess U.S. fissile materials at DOE facilities; Mutual Reciprocal Inspection agreements with Russia on plutonium and highly enriched uranium; and reciprocal dismantlement, transparency and irreversibility agreements with Russia.

Intelligence

The Intelligence program's FY 1999 budget request of \$33.6 million continues to address nonproliferation activities, such as the theft and smuggling of nuclear materials. DOE provides technical, analytical, policy and implementation support to the efforts of the Nation's policy community to deal with such complex issues as denuclearization of the Korean peninsula, the protection of fissile material in the FSU and the achievement of arms control objectives, such as the Comprehensive Test Ban Treaty, Nuclear Nonproliferation Treaty, and Fissile Materials Cutoff Treaty. The FY 1999 budget request expands training in strategic material identification and illicit trafficking prevention focusing on NIS and East Europe.

Nuclear Safeguards and Security

This program is requesting \$53.2 million in FY 1999. The request includes funding to provide effective policy and training for protection of the Department of Energy's (DOE) nuclear weapons, nuclear materials, classified information, and facilities. The program also provides technology development, technical direction and support to domestic safeguards and security at DOE facilities. The declassification program implements effective classification and declassification information policies and performs required declassification activities to ensure that classified information will not be released by the implementation of Executive Order 12958. The Nuclear Safeguards and Security budget request includes \$1.0 million for accelerated development of computer security enhancements for information assurance and \$5.0 million to begin alarm system replacement and installation of vehicle barrier systems at headquarters to comply with Department of Justice Report on Vulnerability Assessment of Federal Facilities.

Security Investigations

The Security Investigations program is requesting \$10.0 million in FY 1999. The request funds background investigations for DOE-wide federal employees and Headquarter's support services and protective force contractors who, in the performance of their official duties, require security clearance permitting access to Restricted Data, National Security Information, or Special Nuclear Material. Program requests totaling an additional \$20.0 million will provide funding for security investigations for contractor and other non-federal employees at the Field Offices.

Emergency Management

The Emergency Management program is requesting \$23.7 million in FY 1999. The request will provide comprehensive, integrated emergency planning, preparedness, response, and management throughout DOE. The increased funding will strengthen and expand DOE's support for domestic crisis and consequence management in combating WMD terrorism and nuclear, chemical, and biological material trafficking. The FY 1999 request also includes funding for the Department's Communications Center, previously part of the Human Resources and Administration program, and funding for threat assessment, previously funded under the Intelligence program.

Program Direction

Finally, the FY 1999 budget is requesting \$88.9 million for the Program Direction account. This includes funding for all Federal staffing, Headquarters support service contracts, and the Working Capital Fund.

Highlights of Program Changes (\$ in millions)

Arms Control (FY 1998 \$234.6; FY 1999 \$256.9) **+\$22.3**

The increase in Arms Control and Nonproliferation reflects increased policy and analysis requirements associated with the anticipated negotiations of a new START III agreement, specifically in support of the Helsinki Summit Statement (FY 1998 \$19.6; FY 1999 \$24.1; +\$4.5); increased efforts in International Safeguards (FY 1998 \$18.8; FY 1999 \$23.3; +\$4.5); increased nonproliferation activities for **Materials Protection, Control, and Accounting** activities to expedite the installation of systems, procedures, controls, facilities, and equipment to prevent the spread of nuclear weapon fissile materials (FY 1998 \$137.0; FY 1999 \$152.3; +\$15.3); increased international security to assist Kazakhstan in meeting long term security and storage requirements for plutonium-bearing spent fuel located at the Aktau Reactor (FY 1998 \$10.0 from prior year balances; FY 1999 \$15; +\$5.0); partially offset by a reduction in the **Initiatives for Proliferation Prevention (IPP)** program (FY 1998 \$29.6; FY 1999 \$15.0; -\$14.6) and adjustments to other arms control programs (-\$2.4).

Nuclear Safeguards and Security (FY 1998 \$47.2; FY 1999 \$53.2) **+\$6.0**

Funding has been provided for accelerated development of computer security enhancements for information assurance (+\$1.0) and to begin alarm system replacement and installation of vehicle barrier systems (+\$5.0) at headquarters to comply with Department of Justice Report on Vulnerability Assessment of Federal Facilities.

Security Investigations (FY 1998 \$30.0; FY 1999 \$30.0) **\$0.0**

Of the \$30 million for security investigations in FY 1999, user organizations will provide approximately \$20 million for contractor clearances.

Emergency Management (FY 1998 \$20.0; FY 1999 \$23.7) **+\$3.7**

Restores funding for the Communications Center (+\$0.3), and provides funding for expansion of Atmospheric Release Advisory Capability for strengthened domestic antiterrorism program (+\$0.6), development of nuclear forensics analysis capability in support of USG nuclear smuggling prevention initiatives, expand the communicated Threat Assessment (+\$2.0), and support interagency and Departmental exercise program (+\$0.8).

Program Direction (FY 1998 \$82.9; FY 1999 \$88.9)**+\$6.0**

The increase reflects escalation for salary and benefits, some additional funding for support services over the FY 1998 appropriation but below the FY 1997 appropriated level, and an increase in the Working Capital Fund for the Office of Nonproliferation and National Security.

Defense Environment, Safety and Health**Program Overview**

The Other Defense Activities program of the Office of Environment, Safety and Health is discussed in this section and is concentrated in three business functions: Oversight, Health Studies, and the Radiation Effects Research Foundation (RERF), as well a small share of Environment, Safety and Health's Program Direction funding.

The Oversight program provides the information and analysis needed to ensure that the Secretary of Energy, Department and contractor management, and all Departmental stakeholders have an accurate and comprehensive understanding of the effectiveness, vulnerabilities, and trends of the Department's environment, safety, health, and safeguards and security policies and programs. The Oversight program includes the Site Residents Program, Assessments, Accident Investigation, Analysis, Price-Anderson Amendment Acts of 1988 Enforcements, and the Departmental Representative to the Defense Nuclear Facilities Safety Board. The primary goal of the Oversight program is to promote constructive change in the Department's environment, safety, health, safeguards, and security management programs through a continuous cycle of independent assessments, analysis, reports and follow-up validation.

The Health Studies program promotes the health and safety of Department of Energy workers and supports continued efforts to understand the effects of radiation on humans. It is comprised of three programs: Occupational Medicine, which is focused on identifying and tracking occupationally-related health effects among worker populations; Epidemiologic Studies, which includes the analysis of worker injury and illness data to identify emerging health issues associated with job exposures and to evaluate the impact of health and safety practices at departmental facilities; and International Health Studies, which includes health and environmental programs supporting the expanded knowledge of health effects resulting from radiation exposure in the Marshall Islands and the former Soviet Union.

The Radiation Effects Research Foundation (RERF) is the successor of the Atomic Bomb Casualty Commission, which was established to investigate the effects of radiation exposure to survivors of the atomic bombings of Hiroshima and Nagasaki. Funding for the RERF is provided by the Government of Japan, through the Ministry of Health and Welfare, and the U.S. Government, through DOE. The objective of the RERF is to collect data, for peaceful purposes, on the medical effects of radiation on man, with a focus on contributing to the health and welfare of the atomic bomb survivors. The RERF also evaluates diseases that may be affected by radiation.

The Program Direction account includes the salaries, benefits and travel for 46 Full Time Equivalents, approximately 13 percent of the Environment, Safety and Health federal workforce.

Budget Overview

The FY 1999 budget request for the Defense Environment, Safety and Health programs is \$74.0 million, which is \$4.7 million or 6 percent less than the FY 1998 comparable amount. Of the FY 1999 request, approximately 19 percent is for Oversight, 56 percent is for Health

Studies, 19 percent is for the Radiation Effects Research Foundation, and 6 percent is for Program Direction.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Environment, Safety and Health					
Office of environment, safety and health (defense) .	66,597	74,000	69,231	-4,769	-6.4%
Program direction	4,769	4,769	4,769	—	—
Subtotal, Environment, Safety and Health	71,366	78,769	74,000	-4,769	-6.1%
Use of prior year balances	—	-476	—	476	100.0%
Total, Environment, Safety and Health	71,366	78,293	74,000	-4,293	-5.5%
Full time equivalent employment (FTEs)	46	46	46	—	—

FY 1999 Budget Request

The Defense Environment, Safety and Health Oversight program is requesting \$13.8 million in FY 1999, which is \$0.2 million or 2 percent less than the FY 1998 comparable amount. The program will continue to promote effective line management performance through the course of independent assessments and reporting, will identify issues appropriate for the attention of senior managers, provide updates on the progress of corrective actions, ensure accidents are adequately investigated, and provide oversight of Price-Anderson enforcement activities.

The **Health Studies** program is requesting \$41.5 million in FY 1999, which is \$4.5 million or 10 percent less than the FY 1998 comparable amount. The Health Studies program will continue the **Marshall Islands** medical surveillance program (\$6.8 million), U.S.-Russian studies of contaminated regions, and epidemiological surveillance of DOE workers. The FY 1999 request also fully supports the DOE former workers program, which provides occupational medical surveillance pilots at an increasing number of sites throughout the complex.

The **Radiation Effects Research Foundation** is requesting \$14.0 million in FY 1999, which is equivalent to the FY 1998 comparable level. The RERF will continue to monitor the effects of radiation resultant from the atomic bombings, and to promote the welfare of the atomic bomb survivors in conjunction with the Japanese government.

The FY 1999 request provides \$4.8 million in **Program Direction** funding, which is equivalent to the FY 1998 comparable level. This funding provides for the salaries, benefits and travel associated with 46 Full Time Equivalents.

The performance objectives of the Defense Environment, Safety and Health programs are largely qualitative, rather than quantitative. The programs will continually strive to provide excellent Department-wide environment, safety, health, safeguards and security support by a consistent, credible oversight process, preventing the recurrence of worker injuries and environmental damage, ensuring follow-up to corrective actions, promoting high quality workplace medical services, and employing epidemiologic analysis to analyze dose-response relationships and the effect of exposures and site conditions on the health of workers and offsite populations. Success at these efforts will be measured, in part, by decreased rates of occupational injury or illness, downward trends in recurrence of accidents and environmental

releases , significant reduction in environment, safety, health, safeguards and security issues, and decreased number of radiological exposures and safety violations.

Highlights of Program Changes (\$ in millions)

Health Studies (FY 1998 \$46.0; FY 1999 \$41.5) - \$4.5

The overall decrease in Health Studies reflects the completion of the Hanford Thyroid Disease Study (-\$2.0) and the State Health Agreements Program (-\$4.0) in FY 1998, offset in part by increases in Occupation Medicine to expand the DOE former workers program to four additional pilot sites in FY 1999 (+\$1.1), and expansion in scope of studies conducted within Epidemiologic Surveillance programs (+\$0.5).

Worker and Community Transition

Mission

The Office of Worker and Community Transition was formed in September 1994 to assure the fair treatment of workers and communities affected by changing Department of Energy missions and was established in accordance with Section 3161 of the Defense Authorization Act of 1993.

Program Overview

The Worker and Community Transition program provides work force restructuring activities related to the defense mission, local impact assistance to those communities affected by work force restructuring plans, and leadership and management of the development of short and long-term programs and initiatives that identify assets that are excess to current Department needs and are potentially available for sale, transfer, or reuse.

More specifically, the program provides overall coordination including final recommendation to the Secretary on approval of work force restructuring plans. Activities ensure effective work force planning that identifies and retains critical skills, knowledge and abilities, and provides appropriate public notice for work force restructuring. Strategies include providing preference to displaced workers for new hiring by the Department and providing retraining for the Environmental Restoration and Waste Management program or other employment opportunities. The program develops effective and efficient initiatives that limit involuntary layoffs and provides appropriate voluntary separation incentives, including severance enhancement, retraining assistance, outplacement assistance, relocation assistance, and extension of medical benefits. Consistent with Section 304 of the FY 1998 Energy and Water Development Appropriations Act, this program request will cover all enhanced worker benefits provided under Section 3161.

Additionally, Congress has identified this program as the only authorized source of funding for local impact assistance to communities affected by work force restructuring plans. This includes many sites that have transitioned from Defense Programs' management to Environmental Restoration and Waste Management. The Worker and Community Transition program assists communities affected by Departmental work force changes by developing policies and facilitating assistance for such communities to perform economic transition activities.

The functions of the Office of Asset Management were added to the Office of Worker and Community Transition in FY 1997. Asset Management functions will focus on pilot project proposals, such as recovery of precious metals from weapons components and electronic scrap recycling and use, which are designed to provide a financial return to the Federal government through the disposition of the assets as well as stimulating regional and local economic development.

The program successfully managed the reduction of about 43,000 contractor personnel between FY 1993 and 1997. Nearly two thirds of separations to-date have been voluntary, with an average (including workers separated through attrition) separation cost of approximately \$17,000 per position. When attrition is excluded, average separation costs have been approximately \$23,000. Annual savings to-date from these reductions are estimated to exceed \$2.8 billion in salaries and benefits. In addition, the community transition activities have maintained or led to the creation of more than 10,000 private sector jobs.

Budget Overview

It is anticipated that the Office of Worker and Community Transition will manage the Department's effort to reduce the size of the contractor work force and implement more efficient contract mechanisms that could impact 5,000 workers in FY 1999. Community transition assistance is expected to create approximately 2,500 jobs within affected communities during FY 1999 at a cost, based on past performance and bench marking to private sector best practices for job replacement, of approximately \$10,000 per position.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Worker and community transition					
Worker and community transition	57,659	57,659	41,000	-16,659	-28.9%
Program direction	4,841	3,500	4,000	500	14.3%
Subtotal, Worker and community transition	62,500	61,159	45,000	-16,159	-26.4%
Use of prior year balances	—	-11	—	11	100.0%
Total, Worker and community transition	62,500	61,148	45,000	-16,148	-26.4%
Full time equivalent employment (FTEs)	27	25	24	-1	-4.0%

Of the FY 1999 request level, approximately 46 percent will fund work force restructuring requirements, 46 percent will provide community transition assistance, and 8 percent will fund program direction, which includes the role of asset management.

FY 1999 Budget Request

The FY 1999 budget request for the Worker and Community Transition program is \$45.0 million. In FY 1999, the **work force restructuring** portion of the program is expected to be funded at \$20.5 million. An important work force restructuring goal is to mitigate the impacts on displaced workers while humanely and cost-effectively managing the transition to a reduced work force that will better meet ongoing mission requirements. The program will gauge the effectiveness of the work force planning process at each site by holding to 2 percent or less the number of jobs vacated through incentivized and non-retirement separations that have to be filled by employees outside the DOE complex. In addition, they will ensure reemployment of at least 60 percent of separated workers seeking new jobs by sponsoring community-based businesses, career assistance programs, further education and retraining programs.

In FY 1999, the **community transition** portion of the program is expected to be funded at \$20.5 million. A community transition assistance goal is to mitigate the impacts on communities from contractor work force restructuring at Department sites by supporting local economic development authorities, to promote rapid and effective defense conversion with new private sector jobs for displaced workers and new businesses for the community. During FY 1999, contingent upon appropriations, \$6 million will be provided to the State of Idaho under the terms of a settlement agreement and \$5 million will be provided to the Mound Facility to support an accelerated sale of the facility which will save the Department future costs of maintaining and safeguarding that closed facility. The Office of Worker and

Community Transition expects to provide additional community transition funding to nine other sites based on grant requests that are reviewed by the Department of Commerce/Economic Development Administration. Support for local community transition activities will create approximately 2,300 new jobs in FY 1998 and 2,500 jobs in FY 1999.

In FY 1999, the program direction portion which provides for the federal management and administrative personnel to carry out the Worker and Community Transition mission will be funded at \$4.0 million. Within program direction, the leadership and management of the asset management program will be continued. The goal of asset management will be to support the President's seven year effort to reduce the deficit by generating \$75.0 million (\$15.0 million annually) from the Department of Energy through asset sales over five years and promote the reduction in DOE's physical asset base.

Highlights of Program Changes (\$ in millions)

Worker and Community Transition (FY 1998 \$57.7; FY 1999 \$41.0) - \$16.7

Work Force Restructuring (FY 1998 \$29.4; FY 1999 \$20.5) - \$8.9

The decrease in need for funding is caused by several factors. In work force restructuring, the number of workers involved in additional downsizing is expected to be less than in FY 1998. Further, the change in funding direction (contained in Section 304 of the FY 1998 Energy and Water Development Appropriations Act) that will focus on funding enhanced benefits from implementing Section 3161 rather than fully funding Defense Programs separation costs, is expected to result in lower expenditures from this account.

Community Transition Assistance (FY 1998 \$28.3; FY 1999 \$20.5) - \$7.8

For the sites experiencing work force reductions in FY 1999, the Office of Worker and Community Transition estimates there will be less need for community transition assistance than in FY 1998.

Fissile Materials Control and Disposition

Mission

In the aftermath of the Cold War, significant quantities of weapons-usable fissile materials (primarily plutonium and highly enriched uranium) have become surplus to national defense needs both in the United States and Russia. The danger exists not only in the potential proliferation of nuclear weapons, but also in the potential for environmental, safety and health consequences if the materials are not properly safeguarded and managed. The Department of Energy's (DOE) Office of Fissile Materials Disposition is responsible for defining and implementing a path forward for the verifiable storage and disposition of U.S. weapons-usable fissile material and for providing technical support for efforts to attain reciprocal actions for the disposition of surplus Russian plutonium. The efforts undertaken by the Office of Fissile Materials Disposition contribute to the Administration's approach to irreversibly dispose of the Nation's surplus plutonium and highly enriched uranium, to obtain reciprocal action in Russia, and to reduce the number of sites where surplus weapons-usable materials are stored.

Program Overview

In July, 1996, the Department issued a Record of Decision regarding the disposition of surplus highly enriched uranium (HEU) which calls for down-blending surplus highly enriched uranium to low enriched uranium for use in commercial reactor fuel. Because of the various forms of HEU and the availability dates from weapons dismantlement and site cleanup operations, this would take place over an estimated 15 to 20-year period.

In January, 1997 the Department issued a Record of Decision (ROD) regarding the storage of all weapons-usable fissile materials and the disposition of surplus plutonium. The ROD calls for the Department to reduce the number of sites where plutonium is stored through a

combination of storage and disposition alternatives. Surplus plutonium pits from Rocky Flats are being moved to Pantex. Stabilized and separated non-pit plutonium from Rocky Flats would be moved to Savannah River after certain conditions are met. Storage of surplus plutonium at other sites would continue, pending disposition. Highly enriched uranium would continue to be stored at Oak Ridge, pending disposition of the surplus.

The Department is pursuing a hybrid plutonium disposition strategy that allows for immobilization of surplus weapons plutonium with ceramic material surrounded by vitrified high level waste, and burning of surplus plutonium as mixed oxide (MOX) fuel in existing domestic commercial reactors. The Department has decided that at least eight metric tons of surplus plutonium would be immobilized because it is not suitable for use in MOX fuel without extensive purification. The timing and extent to which either or both approaches are ultimately deployed will depend on follow-on work to resolve technical, institutional, cost and international issues. This will enable the President to initiate plutonium disposition either multilaterally or bilaterally through negotiations or unilaterally as an example to Russia and other nations.

Budget Overview

The Program's efforts in FY 1998 and FY 1999 will focus on implementing the Record of Decision to disposition surplus weapons highly enriched uranium by blending it down to low enriched uranium for peaceful use in commercial reactor fuel; consolidate long-term storage of surplus fissile materials pending disposition; demonstrate an integrated prototype system to disassemble plutonium weapons components and convert the plutonium to stable, inspectable forms suitable for disposition; perform tests, process development, technology demonstrations, site-specific environmental reviews, and detailed cost proposals or analyses for both plutonium disposition approaches; complete the Mixed Oxide Fuel Fabrication Facility and Irradiation Services procurement; select disposition site(s); and begin detailed designs for the Pit Disassembly and Conversion Facility and the Mixed Oxide Fuel Fabrication Facility. In addition to domestic-based activities, the program will expand its Russian activities to include a series of analyses and small-scale tests and demonstrations of the disposition technologies; support government-wide efforts in coordinating with other nations on technical issues associated with the disposition of surplus weapons-usable plutonium; and, in FY 1999, work with Russia to design a pilot-scale weapons plutonium conversion system in Russia.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Fissile materials control and disposition					
Fissile materials control and disposition	100,163	99,451	164,372	64,921	65.3%
Program direction	3,633	4,345	4,588	243	5.6%
Subtotal, Fissile materials control and disposition	103,796	103,796	168,960	65,164	62.8%
Use of prior year balances	—	-119	—	119	100.0%
Total, Fissile materials control and disposition	103,796	103,677	168,960	65,283	63.0%
Full time equivalent employment (FTEs)	21	25	25	—	—

FY 1999 Budget Request

The Fissile Materials Disposition program is requesting \$169.0 million in FY 1999, an increase of \$65.3 million over the FY 1998 comparable amount. This increase will allow the program to start Title I and II design for the **Pit Disassembly and Conversion Facility** (FY

1999 \$25.0 million) and the **Mixed Oxide Fuel Fabrication Facility** (FY 1999 \$28.0 million). In addition, the program will develop a pilot-scale weapons plutonium conversion system in Russia. The program will continue to move surplus plutonium pits from Rocky Flats to Pantex; complete design of a future storage facility for surplus non-pit materials; continue the transfer of 50 metric tons (mt) of surplus highly enriched uranium to the United States Enrichment Corporation (USEC); complete site-specific environmental reviews; issue a Record of Decision on site(s) for plutonium disposition facilities; continue testing of the pit disassembly and conversion prototype; and complete tests, process development and technology demonstrations required for plutonium disposition. The Record of Decision and implementation efforts will directly contribute to the advancement of U.S. and international nonproliferation interests and to improving the cost-effectiveness of the Department's management of stockpiles of surplus fissile materials.

Highlights of Program Changes (\$ in millions)

Fissile Materials Disposition (FY 1998 \$103.7; FY 1999 \$169.0)		+\$65.3
❖	Title I and II design for the Pit Disassembly and Conversion Facility and the MOX Fuel Fabrication Facility	+\$53.0
❖	Development of a Russian pilot-scale plutonium conversion system	+\$15.0
❖	Decreases in environmental analyses	-\$3.0

Nuclear Energy

Mission

The Office of Nuclear Energy, Science & Technology (NE) maintains the Federal Government's technical expertise in nuclear security and safety issues. Through its unique research and development infrastructure, the Department strives to maintain nuclear energy as a reliable, economical and environmentally safe source of energy for the next century.

Program Overview

The Office of Nuclear Energy, Science and Technology manages efforts to build and deliver durable and reliable nuclear power systems to NASA and other Federal agencies, produce and distribute a reliable supply of radioisotopes for medical and research purposes, ensure continued U.S. leadership in nuclear technology by supporting nuclear education initiatives, address issues associated with the long-term operation of nuclear power plants, manages test and research reactors to meet research, isotope production and other Departmental goals and oversee the legacy of the nation's uranium supply and enrichment activities. The Energy Supply appropriation supports these activities, and was discussed earlier.

The collapse of the Soviet Union left many emerging democratic countries in Central and Eastern Europe and the former Soviet Union without the technical and financial resources needed to operate the Soviet-designed nuclear power plants in a safe manner. Since 1992, NE has led the U.S. Government's effort to reduce the health and environmental threats posed by the continued operation of aging nuclear reactors in Russia, Ukraine, and other countries in the region. The goal of the International Nuclear Safety program is to reduce the health and environmental threats posed by aging nuclear reactors in these nations and to prevent the occurrence of another Chornobyl-type accident.

The **International Nuclear Safety Program** has four elements that are critical to achieving lasting improvements in nuclear safety culture and infrastructure development. First, the program is working to improve the capabilities of nuclear power plant operators to establish sound operational procedures, and to develop methods for responding to operational abnormalities. Second, the program seeks to improve the physical condition of the plants, particularly their safety systems. Third, the program provides professionals involved in the

design, operation, and regulation of nuclear power plants with the techniques and expertise required to conduct safety analyses that are consistent with Western practices. The fourth element is to provide assistance to host countries in developing the domestic liability legislation needed to enable a broader involvement of U.S. private industry and establish a strong, independent regulatory authority. Pacific Northwest National Laboratory is the technical manager for this program where more than 200 individual projects have been initiated with the participation of 20 Soviet-designed plant sites and include the participation of 46 U.S. commercial companies to provide equipment, technical expertise, and services to improve safety. In addition, more than 200 staff members from 14 nuclear reactor sites throughout the region have worked with U.S. personnel at 12 domestic nuclear power plants to observe U.S. safety operations.

In previous years, NE had managed a second initiative, **Nuclear Security**, to cooperate with Russia to shutdown its plutonium-producing reactors, as directed by the Gore-Chernomyrdin agreement of June 1994. One of the program's most important near-term efforts was to cooperate with Russia to convert the current reactor cores to non-weapons-grade plutonium producing cores, which would allow the affected communities to continue receiving much-needed energy while a long-term strategy is developed. The Department of Defense now funds this project through its Cooperative Threat Reduction Program.

Budget Overview

The FY 1999 Nuclear Energy budget request within the Other Defense Activities appropriation is \$35.0 million.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998
Nuclear Energy				
International nuclear safety	79,500	35,000	35,000	—
Nuclear security	3,500	—	—	—
Chernobyl shutdown initiative	1,500	—	—	—
Total, Nuclear Energy	84,500	35,000	35,000	—

FY 1999 Budget Request

The request of \$35.0 million for the International Nuclear Safety Program continues to support improvements to the physical condition and operational safety of Soviet-designed reactors in Russia, Ukraine, and Central and Eastern Europe.

Over half the FY 1999 request for International Nuclear Safety is needed to fund Management and Operational Safety Improvements (\$11.8 million) and Engineering and Technology Upgrades at Soviet-designed reactors (\$9.0 million). Pilot training courses completed at the Russian and Ukrainian training centers are being transferred to other Soviet-designed reactor sites, including Armenia. Plant management and operations have been improved through the use of simulators and training programs for plant operators. The program also continues to support physical plant improvements such as Safety Parameter Display Systems, better confinement mechanisms, emergency power supply systems, and safety training for plant managers and employees.

Other key aspects of the program are the Plant Safety Evaluations (\$5.5 million), International Nuclear Safety Centers (\$1.5 million), Nuclear Safety Institutional & Regulatory Support (\$1.5 million), International Nuclear Safety Activities Support (\$0.2 million) and Program Management (\$5.0 million).

Highlights of Program Changes (\$ in millions)

The overall request for the International Nuclear Safety Program has remained constant with the FY 1998 appropriation, however:

Management and Operational Safety Improvements +\$1.9

Funding for management and operational safety improvements have increased \$1.9 over the FY 1998 appropriation to support increased requirements for pilot training and quality assurance programs in Russia, Ukraine and Lithuania. (FY 1998 - \$9.9; FY 1999 - \$11.8)

Engineering and Technology Upgrades -\$1.0

Funding requirements for engineering and technology upgrades have decreased \$1.0 primarily due to completion of implementation activities for Safety Parameter Display Systems at three plants in Russia. (FY 1998 - \$10.0; FY 1999 - \$9.0)

Plant Safety Evaluations -\$0.9

Funding requirements for plant safety evaluations decreased \$0.9 million. In FY 1998, the U.S. Agency for International Development (AID) provided funding to complete this work in Ukraine. (FY 1998 - \$6.4; FY 1999 - \$5.5)

Office of Hearings and Appeals

Mission

The Office of Hearings and Appeals (OHA) is responsible for all of the Department's adjudicatory processes, other than those administered by the Federal Energy Regulatory Commission. Historically this office has been funded by Interior appropriations, in order to adjudicate cases arising under the Emergency Petroleum Allocation Act of 1973 (EPAA). The goal of OHA is to issue prompt, high quality decisions that fairly and equitably resolve the matters that are brought before it, including, but not limited to determining the eligibility of individuals to hold security clearances brought before it.

Program Overview

Over the years, OHA has gained jurisdiction over a wide variety of matters including: Freedom of Information Act and Privacy Act Appeals, evidentiary hearings to determine an employee's eligibility for a security clearance appeals of initial agency decisions on whistleblower complaints, and requests for exception from DOE regulations and orders, such as reporting requirements to Departmental elements. Funding for this activity is being sought in Energy and Water Development appropriations.

Budget Overview

Until FY 1996, the Office of Hearings and Appeals always received full funding for its activities through the Interior and Related Agencies appropriations bill. For FY 1996 and FY 1997, Congress funded only activities arising from the Emergency Petroleum Allocations Act of 1973, and directed OHA to charge Departmental elements (directed at Energy and Water Development funds) for adjudicative services. For FY 1998, OHA received funding for some of its non-EPAA related adjudicative services through this appropriation.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998
Office of hearings and appeals	1,840	2,300	2,400	100 4.3%
Full time equivalent employment (FTEs)	—	21	21	— —

FY 1999 Budget Request

The Office of Hearings and Appeals is seeking \$2.4 million of new authority in Other Defense Activities to conduct appeals to security investigations, appeals of Freedom of Information Act determinations and other Departmental appeals. This request is in addition to a \$2.7 million request for Interior funds to finance its oil overcharge activities (EPAA). Most expenses are related to its professional staff with Personnel Compensation and Benefits expenses equal to \$1.8 million, and Support Services equal to \$0.6 million. Support services are primarily provided within the Department's Working Capital Fund, and include rent, supplies, printing and communication and information technology. In FY 1999, OHA expects to issue 235 high-quality determinations and make all of its decisions available on the Internet to interested persons within one week of issuance.

Highlights of Program Changes (\$ in millions)

Office of Hearings and Appeals (FY 1998 \$2.3; FY 1999 \$2.4)

+\$0.1

This increase reflects an adjustment needed for the annual pay raise.

Naval Reactors

Mission

Naval Reactor's mission is to provide the Navy with safe, long-lived, militarily-effective nuclear propulsion plants in keeping with the Nation's defense requirements, and to ensure their continued safe and reliable operation.

Program Overview

Naval Reactor's responsibility extends to all aspects of Naval nuclear propulsion — from technology development through reactor operations to, ultimately, reactor plant disposal. The Program's efforts are critical to the continued success of the numerous reactors in operating submarines and surface ships, comprising 40 percent of the Navy's warships and the successful development of the reactor plant for the New Attack Submarine class. Naval Reactors is responsible for more reactors than the entire U.S. commercial nuclear power generating industry and more reactors than the next two largest commercial nuclear power generating nations in the world combined (France and Japan).

The program will maintain an integrated, comprehensive, and far-sighted analytical, development and testing effort for existing and future reactor plants. This will be accomplished in a number of ways, to include: continuously test, verify, and refine reactor technology — and integrate new technologies and techniques into existing system and component designs — to improve overall reactor plant performance, reliability and longevity; rigorously test materials, fuel, cores, components and systems; and develop simplified, more affordable reactors with improved power capabilities, increased endurance, and added dependability.

Continuing development efforts are yielding greater capabilities. Major efforts for the near future include upgrades to existing components and equipment to help extend operating ship lifetimes and improve overall reactor plant performance, and development/testing of the next generation reactor components and systems for the Navy's New Attack Submarine class — including the first true life-of-the-ship core, which will obviate the need for expensive refuelings, and the new concept steam generator, which should greatly reduce corrosion concerns.

The Program's cost-saving initiatives led to shutting down six of eight land-based test/research and development prototype plants. Work in this budget is aimed at inactivating and laying up the shut down plants to place them in an environmentally benign state pending full dismantlement at some future date.

Budget Overview

The FY 1999 budget request for the Naval Reactors program reflects the above described activities. Naval Reactors major priorities, in order, include: 1) support the current operating fleet (location of the majority of the funds); 2) continue development of the New Attack Submarine; and 3) evaluation and servicing work - operating two prototypes and inactivating six shutdown prototypes.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Naval Reactors					
Naval reactors development	663,030	650,420	645,400	-5,020	-0.8%
Program direction	18,902	20,080	20,100	20	0.1%
Subtotal, Naval Reactors	681,932	670,500	665,500	-5,000	-0.7%
Use of prior year balances	—	-148	—	148	100.0%
Total, Naval Reactors	681,932	670,352	665,500	-4,852	-0.7%
<i>Full time equivalent employment (FTEs)</i>	<i>197</i>	<i>207</i>	<i>204</i>	<i>-3</i>	<i>-1.4%</i>

FY 1999 Budget Request

The FY 1999 Other Defense Activities budget request for Naval Reactors is \$665.5 million. The budget request represents the amount needed for the following principle efforts:

- ❖ Conduct planned development, testing, and evaluation in the areas of nuclear physics, steam generators, instrumentation and control, materials, reactor and reactor plant design, and manufacturing and inspection methods to ensure reactor plant service life meets Navy goals for extended warship operation: 50 years for aircraft carriers, 40 years for strategic submarines, and 30 years for attack submarines.
- ❖ Complete scheduled reactor and reactor plant analyses and analysis methods improvements in the areas of nuclear physics, reactor configuration and design, analytical modeling and thermal hydraulics to ensure safety and reliability of the reactor plants in the Navy's nuclear powered warships so they can fulfill their national defense mission.
- ❖ Accomplish planned core and reactor component/system design and technology development efforts to support the Navy's acoustic requirements.
- ❖ Maintain a utilization factor of at least 90 percent for prototype plants, ensuring their availability for scheduled testing, training, and servicing needs.
- ❖ Meet FY 1999 cost and schedule goals to safely and responsibly inactivate six shutdown test reactor plants in support of the Department's environmental clean-up goals.
- ❖ Attain goal of zero personnel exceeding Federal limits for radiation exposure and no significant findings resulting from environmental inspections by state and federal regulators.
- ❖ Complete 85 percent of New Attack Submarine plant development and testing work by the end of FY 1999.

**Highlights of
Program Changes
(\$ in millions)**

Materials Development and Verification (FY 1998 \$115.0; FY 1999 \$119.5) **+\$4.5**

The increase primarily reflects an allowance for inflation necessary to maintain the appropriate level of material analysis and testing as ships are kept in service longer, and materials are called upon to perform safely and reliably over longer time periods.

Plant Technology (FY 1998 \$112.9; FY 1999 \$111.1) **-\$1.8**

The decrease reflects progress on reactor plant development efforts for the Navy's new attack submarine, including development of the new concept steam generator, a major innovation which should greatly reduce corrosion concerns in steam generators.

Evaluation and Servicing (FY 1998 \$166.0; FY 1999 \$158.9) **-\$7.1**

The decrease reflects a reduction in inactivation work on the shutdown prototype reactor plants.

Environmental Management

Mission

After the Department of Energy ceased most nuclear weapons production operations in the late 1980's, the Department established the Office of Environmental Management (EM) to manage the legacy of contamination resulting from the operation for nearly five decades of the largest government-owned industry. EM now manages the thousands of contaminated areas and buildings, huge waste volumes, and nuclear materials left over from the nuclear weapons production process and nuclear-related research efforts. In June, 1996, EM began working toward a goal of completing cleanup at as many sites as possible within a decade. To reach this goal, EM began a planning process to establish the schedule and cost for each EM site to accomplish as much cleanup as possible by 2006. A Discussion Draft of the 2006 Plan was released in June, 1997, and a revised draft will be released in early 1998.

FY 1999 marks the first fiscal year in which the EM budget structure is aligned with the 2006 Plan process. All EM activities have been organized into projects, which have a more defined scope, schedule, and cost that support a defined end state at a specific EM site. In addition, the EM projects have been categorized within three decision units that focus on the end-date of the project: Site Closure, Site/Project Completion, and Post 2006 Completion; Science and Technology activities and Program Direction funding remain as separate decision units.

With the FY 1999 level of funding (\$6,123.9 million), EM expects to be in compliance with applicable environmental and other requirements. At some sites, there is a small gap between compliance requirements and available funding. EM therefore is striving for additional efficiencies and other measures to close this gap. EM will continue to work with regulators to address this issue. If necessary, EM will close the gap by using funding available for other EM programs at each site in order to comply with all applicable requirements of Federal, State, and local statutes and regulations; permits, administrative orders, or judicial decrees; and, enforceable milestones or schedules established in agreements negotiated between EM and regulators.

The budget request for FY 1999 consists of five appropriations: Defense Facilities Closure Projects, Defense Environmental Restoration and Waste Management, Defense Environmental Management Privatization, Non-Defense Environmental Management, and Uranium Enrichment Decontamination and Decommissioning Fund.

Defense Facilities Closure Projects

Program Overview

In August 1997, Secretary Peña designated the Rocky Flats, Fernald and Mound sites as pilot sites for accelerated closure. Congress established the Defense Facilities Closure Projects appropriation in FY 1998 and included funding for the Fernald and Rocky Flats. In FY 1999, this appropriation has been expanded to include three additional sites under the Ohio Field Office (Mound, Ashtabula and Battelle Columbus Laboratory), as well as the Fernald and Rocky Flats sites. EM's goal is to cleanup these sites by 2006. After EM's cleanup mission is

complete at these sites, no further Departmental mission is envisioned, except for limited long-term surveillance and maintenance (i.e., pump and treat), and the sites will be available for alternative uses.

Budget Overview

The FY 1999 budget request of \$1,006.2 million for the Defense Facilities Closure Projects appropriation is approximately 16 percent of the total FY 1999 budget request of \$6,123.9 million for the Environmental Management (EM) programs. The FY 1999 budget request is \$10.4 million, 1 percent, above the comparable FY 1998 amount. The budget request consists of \$381.0 million for the Ohio sites and \$625.2 million for Rocky Flats.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998
Defense Facilities Closure Projects	862,454	995,885	1,006,240	10,355 1.0%

FY 1999 Budget Request

The strategy for all **Ohio** Field Office sites is to produce an environmentally restored end state by 2005 which serves the community's needs. The Ashtabula site (\$15.4 million) will be released for unrestricted use and returned to the RMI Company by FY 2003. In FY 1999, over 7,000 cubic meters of contaminated soil will be processed and disposed, deactivation of all buildings will be completed, and the contract for demolition will be awarded.

The **Columbus Environmental Management Project** (CEMP) (\$0.3 million) is comprised of the King Avenue and West Jefferson sites, which are privately owned by Battelle Memorial Institute. The King Avenue site will be completed in FY 1998. The West Jefferson site will be transferred to Battelle Laboratories for unrestricted use by FY 2005. In FY 1999, decontamination activities that were initiated in FY 1998 will continue. These activities include equipment and material removal, waste management and project management activities.

The **Fernald** site (\$275.3 million) will be completed and placed under institutional control by FY 2005. Key activities in FY 1999 include: continued waste placement in the on-site disposal facility; shipment of Operable Unit 1 waste; completing remediation of one release site; disposition of remaining low enriched nuclear material inventories; and, continued base services such as safety and health, emergency management, fire protection, utilities operations and security.

Finally, the **Mound Site** (\$90.0 million) will be transferred to the city of Miamisburg by FY 2005. The Mound site is partially funded from the Non-Defense Environmental Management Appropriation, but is predominantly funded from this appropriation. The FY 1999 request allows the site to continue transition from an active production plant to the safe shutdown and cleanup of the building and soil, leading to the disposition of real property. Activities include: the completion of 5 release sites; deactivation of 11 buildings; decommissioning of 3 out of 62 remaining facilities; continuation of base site-wide infrastructure service; and the continuation of storage and/or disposition of transuranic, low-level, hazardous, and sanitary waste.

The current life-cycle baseline for the **Rocky Flats Environmental Technology Site** (RFETS) (\$625.2 million) results in site closure by FY 2010 at a total project cost of \$7.3 billion. The Department and Rocky Flats have challenged themselves to achieve accelerated site closure by FY 2006 at an estimated total project cost of \$6.0 billion. A critical path of work activities that support the accelerated closure include the following: off-site shipment of

Special Nuclear Material (SNM) and stabilized residues by FY 2002; deactivation and demolition of plutonium building once the SNM is removed; shipment of transuranic waste to the Waste Isolation Pilot Plant beginning in FY 1998; treatment and shipment of low-level and mixed low-level waste; and, remediation of contaminated sites as they become available. Specific activities in FY 1999 include: completing remediation of 7 out of 58 release sites; decommissioning 39 facilities; continuing deactivation projects; beginning operation of the Plutonium Stabilization and Packaging System; providing site-wide landlord/infrastructure activities; and storing, treating and disposing of TRU, MLLW, LLW and hazardous waste.

Highlights of Program Changes (\$ in millions)

Defense Facilities Closure Projects (FY 1998 \$995.9; FY 1999 \$1,006.2) +\$10.3

- ❖ Ohio (FY 1998 \$363.8; FY 1999 \$381.0) +\$17.2
 - ▷ Increase due to the acceleration and the additional overall number of release sites to be assessed and cleaned up; initiation of shipment of operable unit (OU) 1 materials, and increased waste placement in Fernald on-site disposal facility. (+\$16.8)
 - ▷ Increase due to re-baselining of work at Mound and Fernald for accelerated work to achieve early site closure date. (+\$9.2)
 - ▷ Increase due to additional program management for acceleration of facility decommissioning and waste management at Fernald and Ashtabula. (+\$3.7)
 - ▷ Decrease due to completion of shipments of all accountable tritium and non-tritium excess materials at Mound in FY 1998. (-\$4.9)
 - ▷ Decrease due to reduction in the cost of disposing low-level and mixed low-level waste for Ohio. (-\$7.9)
- ❖ Rocky Flats (FY 1998 \$632.1; FY 1999 \$625.2) -\$6.9
 - ▷ Increase due to additional deactivation activities being initiated in the Building 776/777 Cluster and the Building 444 Cluster and additional work scope required to remediate 7 release sites. (+\$2.6)
 - ▷ Increase due to additional residue stabilization work for salt pyro-oxidation and incinerator ash stabilization, and the full time operation of the Plutonium Stabilization and Packaging System. (+\$22.5)
 - ▷ Increase due to assumed responsibility for contractor clearance investigation costs and increase in site-wide Safeguards and Security program management. (+\$3.4)
 - ▷ Increase due to increased level of TRU waste shipments to WIPP, increased quantity of LLW shipment off-site, increased levels of packaging and preparation activities for FY 2000 MLLW shipments, and increased support for FY 2000 decommissioning activities. (+\$12.7)
 - ▷ Decrease due to demolition of Building 123 and majority of decommissioning work of the Building 779 Cluster accomplished in FY 1998, and the consolidation of plutonium liquid stabilization activities in Building 371. (-\$5.3)

- ▶ Decrease due to the reduction in the number of special nuclear material (SNM) shipments in FY 1999 (40) compared to FY 1998 (60) which completes the near-term (FY 1997 - FY 1999) shipments. (-\$3.3)
- ▶ Decrease due to completion of the majority of safety upgrades, the completion of Uranium Disposition Project, and residue and waste removal from Building 771 Annex in FY 1998. (-\$7.7)
- ▶ Decrease of Landlord activities due to reduced requirements for surveillance and maintenance, reduction in litigation support service needs by the Rocky Flats Field office, and the completion of the Underground Storage Tank Project in FY 1998. (-\$31.8)

Defense Environmental Restoration and Waste Management

Program Overview

Although EM's budget structure has changed in FY 1999, the nature of activities within the Defense Environmental Restoration and Waste Management essentially remain the same. These activities (waste management, environmental restoration, nuclear material and facility stabilization) now crosscut the new budget categories and are tracked by Government Performance and Results Act (GPRA) metrics. The responsibility for managing and addressing the environmental legacy resulting from the production of nuclear weapons remains the main mission of the EM program. EM has established a goal of cleaning up as many sites as possible by 2006. The FY 1999 budget request reflects the program's increased emphasis on site closure and project completion.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Defense Environmental Restoration & Waste Management					
Site/project completion	1,059,559	965,549	1,047,253	81,704	8.5%
Post 2006 completion	2,766,297	2,746,887	2,673,451	-73,436	-2.7%
Science and technology	334,456	246,459	193,000	-53,459	-21.7%
Program direction	411,011	345,000	346,199	1,199	0.3%
Subtotal, Defense Environmental Restoration & Waste Management	4,571,323	4,303,895	4,259,903	-43,992	-1.0%
Use of prior year balances & other adjustments	-173,398	-7,405	—	7,405	100.0%
Total, Defense Environmental Restoration & Waste Management	4,397,925	4,296,490	4,259,903	-36,587	-0.9%
Full time equivalent employment (FTEs)	3,054	3,003	2,869	-134	-4.5%

Budget Overview

The FY 1999 budget request for Defense Environmental Restoration and Waste Management appropriation of \$4,259.9 million is \$36.6 million less, just under a 1 percent decrease, than the comparable amount for FY 1998. Approximately 25 percent of the FY 1999 budget request is for Site/Project Completion, 63 percent is for Post 2006 Completion, 4 percent is for Science and Technology, and 8 percent is for Program Direction. The FY 1999 budget request and structure reflect the program's increased emphasis on site closure and project completion (i.e., finishing the work as quickly as possible).

FY 1999 Budget Request

Site/Project Completion

Of the \$4,259.9 million requested in FY 1999 for the Defense Environmental Restoration and Waste Management appropriation, \$1,047.2 million is for **Site/Project Completion**. This amount is \$81.7 million, 8.5 percent, above the comparable FY 1998 amount. Within this account, funding will be provided for sites and/or projects that will be completed by FY 2006 at national laboratories and other facilities where DOE will continue to conduct missions beyond 2006. Projects in this account will be performed at sites under the management of the Albuquerque, Idaho, Oakland, Richland and Savannah River Operations Offices.

Albuquerque (\$52.5 million) manages activities at the Sandia National Laboratory (SNL) in both California and New Mexico, the Los Alamos National Laboratory (LANL) and South Valley sites in New Mexico, the Kansas City Plant (KCP) in Missouri, the Maxey Flats site in Kentucky, the Pinellas Site in Florida, and the Pantex Site in Texas. Activities funded in FY 1999 include: completion of the last release site at the KCP; initiation and completion of the remaining 10 (228 total) remedial actions at both SNL sites; annual payments for Pinellas post-contract medical, pension, and other contractor worker benefits; the final potentially responsible party (PRP) payment for Maxey Flats; and continuation of the treatability study for groundwater at Pantex.

At **Idaho** (\$100.6 million), activities are driven by the Idaho Settlement agreement. This agreement requires Idaho to ship a minimum of 3,100 cubic meters (65,000 cubic meters total inventory) of TRU waste offsite for disposal by December 31, 2002. Idaho plans to treat the remaining waste in the planned Advanced Mixed Waste Treatment Project, ship over 9,000 cubic meters of the stored TRU waste to WIPP for disposal by 2006, and remove all waste not later than the end of 2018. In accordance with the Federal Facility Agreement and Consent Order, Idaho must complete remediation activities at the Test Area North (Waste Area Group 1 [WAG 1]), Central Facilities Area (WAG 4) and the Power Burst Facility (WAG 5) by FY 2006. The FY 1999 request allows significant milestone accomplishments to achieve maximum progress toward the 2006 goal. Activities include storing 64,177 cubic meters of TRU waste, storing 3,585 and disposing offsite 7,887 cubic meters of low-level waste, the continuation of the deactivation activities, and the completion of 22 release sites and facilities.

Oakland (\$51.7 million) manages activities at the Lawrence Livermore National Laboratory (LLNL). Oakland is committed to maintaining compliance with all regulatory requirements and agreements. Any urgent risks will be addressed in an expeditious manner. Activities at the LLNL include installing wells at several new extraction locations, completing remediation activities at five release sites, continuing the treatment, storage and disposal activities associated with TRU, MLLW, LLW and hazardous waste, and continuing construction of the Decontamination and Waste Treatment Facility (DWTF).

At **Richland** (\$350.1 million), the Hanford site's mission is to safely and efficiently store, manage, treat and cleanup the site's legacy waste, and to develop and deploy science and technology. The vision for carrying out this mission is that by 2006 EM will have addressed urgent risks, reduced the majority of costly mortgages, be in the process of immobilizing tank wastes, and have remediated high priority reactor sites in the 100 Areas along the Columbia River. The *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) is the basis for EM's 2006 strategy. Activities funded support progress toward the 2006 vision and include: commencement of the stabilization of pure plutonium solutions and installation of the Plutonium Stabilization and Packaging System; commencement of the removal of spent nuclear fuel from the K-Basins; removal of contaminated equipment and 86 percent of the high activity dispersible contaminants removed from 324 B-Cell; completion of B-Plant deactivation; and shutdown of the 340 Liquid Handling Facility.

Savannah River (\$492.3 million) has a mission to eliminate the legacy that resulted from the production of nuclear materials during the cold war. To accomplish this mission, the cleanup program is composed of the following elements: spent nuclear fuel disposition; nuclear materials and spent nuclear fuel stabilization; waste management; deactivation and landlord. The Site/Project Completion account funds all nuclear materials and spent nuclear fuel stabilization activities, as well as construction line-item projects which will be complete by 2006. All other activities are funded in the Post 2006 Completion account. In FY 1999, Savannah River will continue construction on the Actinide Packaging and Storage Facility (APSF), begin the modification of the K-Reactor area facilities, complete plantwide fire protection activities, complete chiller retrofits for F-Canyon and Analytical Laboratories, and continue operations at the H- and F-Canyons in line with the phased canyon strategy.

Post 2006 Completion

The **Post 2006 Completion** request of \$2,673.5 million supports projects that are projected to continue well beyond 2006. A significant number of projects are funded at Albuquerque, Carlsbad Area Office, Idaho, Nevada, Oak Ridge, Richland, and Savannah River. In addition, a variety of multi-site activities are funded in this account. As cleanup is completed, it will be necessary for EM to maintain a presence at most sites to monitor, maintain, and provide information on the contained residual contamination. These activities will be necessary to ensure that the reduction in risk to human health is maintained.

Albuquerque (\$79.3 million) manages the activities for the Los Alamos National Laboratory (LANL) and has oversight of an Agreement in Principle (AIP) with the State of New Mexico. The cleanup of LANL is projected to be complete in FY 2015. Activities supported with the FY 1999 request include: storage, treatment and disposal of mixed low-level and transuranic waste; remediation of 20 release sites and decommissioning of one facility; and, DNFSB Recommendation 97-2 (Nuclear Criticality Predictability Program) activities.

Carlsbad (\$183.6 million) manages EM's **Waste Isolation Pilot Plant (WIPP)** (request is \$9.7 million greater than FY 1998) program. The operation of WIPP is necessary for EM to dispose transuranic waste (TRU) generated by the DOE. By 2006, the Department expects to dispose of approximately 42,000 cubic meters of contact-handled TRU waste. All TRU waste at Rocky Flats, the Nevada Test Site, Mound, and selected small quantity sites will have been disposed at WIPP. By the end of FY 1999, the WIPP program expects to ramp up its receipt rate from 10 to 12 contact-handled TRU waste shipments per week, with an increase to 17 shipments per week by the end of FY 2000. In order to reduce costs, the program is relying on privatization of contact-handled and remote-handled TRU waste transportation services. Other programs funded by the WIPP program include New Mexico Impact Assistance, the Carlsbad Environmental Research and Monitoring Center, Western Governors' Association, Environmental Evaluation Group, cooperative agreements with Indian Tribes, and others.

At **Idaho** (\$311.2 million), the Idaho National Environmental and Engineering Laboratory (INEEL) is responsible for over 85,000 cubic meters of high-level (HLW), TRU, low-level (LLW) and mixed low-level (MLLW) waste. INEEL is also responsible for 570 cubic meters of spent fuel from a number of sources, including the Navy, foreign and domestic research reactors, and some commercial reactors. The 2006 strategy for Idaho will include long-term treatment, storage and disposal operations and will include longer-term projects to complete the disposition of TRU, HLW, and SNF. Due to the longevity of this program, continuous improvements in productivity and efficiency are planned. INEEL plans on the extensive use of innovative technologies to accelerate cleanup schedules and reduce costs. In order to achieve maximum progress toward the Post 2006 goal, FY 1999 activities include: preconstruction work for the planned Advanced Mixed Waste Treatment Project; placement of

458 cubic meters (of the total 570) of INEEL-managed SNF in dry storage or stable wet storage; completion of design of a standardized SNF canister; completion of 19 release sites and facilities (total 262 out of 508); initiation of Title I design for the Health Physics Instrumentation Laboratory; and, continuation of the **Foreign Research Reactor (FRR) Spent Nuclear Fuel Acceptance program (\$9.7 million)**. In addition to the funds provided here, \$3.1 million has been requested within the Cost of Work for Others Program within the Departmental Administration appropriation to support the Foreign Research Reactor SNF Program.

The **Nevada (NV)** (\$74.0 million) EM mission is to characterize and remediate inactive sites and facilities contaminated as the result of historic DOE nuclear testing activities conducted at the Nevada Test Site (NTS), Tonopah Test Range (TTR), Nellis Air Force Range and eight other locations in five states. At the NTS, radioactive and hazardous legacy wastes are treated, stored, and/or disposed. The 2006 strategy for areas outside the NTS boundaries is to characterize, remediate, and restore the surface areas for unrestricted use by the end of 2006. For areas within the boundaries of the NTS, the strategy is to complete site characterization and remediation of as many sites as available funding permits. In FY 1999, NV will conduct characterization and remediation activities at contaminated soil sites on TTR, Nellis and the NTS. Other activities include modeling of underground test areas; characterization, segregation and repackaging of TRU/Mixed TRU; and treatment, storage, and/or disposal of waste.

Oak Ridge (OR) (\$183.0 million) manages activities within the Oak Ridge Reservation (ORR) and several offsite properties contaminated by the OR facility operations. The ORR is comprised of three facilities: the Y-12 Plant, the East Tennessee Technology Park (ETTP), and the Oak Ridge National Laboratory (ORNL). The 2006 strategy at OR will have all legacy TRU and mixed waste treated and disposal-ready by 2006, will have all legacy LLW disposed by 2013, and will have all remedial action sites completed by 2012. All spent nuclear fuel will be shipped to INEEL and Savannah River Site (SRS) for long-term storage. In FY 1999, legacy waste will be progressing towards the goals identified above. Preparations are underway to repackage all ORR contact handled and remote handled TRU waste for disposal in the WIPP. Mixed low-level waste will be treated in the Toxic Substance Control Act (TSCA) incinerator, and other waste will be treated and disposed. Also, the spent fuel shipments to SRS will be completed.

While **Richland** (\$652.5 million) is proceeding toward significant progress by 2006, the majority of their activities will continue beyond 2006. In FY 1999, the EM program at Hanford includes: shutdown of the 340 Liquid Handling Facility; support for a tank waste immobilization facility construction start date of FY 2000; completion of one to three evaporator campaigns to achieve tank waste volume reduction up to 1.5 million gallons; completion of 38 release sites; and, disposition of 470,000 tons of soil in the Environmental Restoration Disposal Facility (ERDF).

Similarly, activities at **Savannah River** (\$730.2 million) will continue beyond 2006. Activities supported by the FY 1999 request include: receipt of 32 shipments of spent nuclear fuel from foreign research reactors (**FRR SNF is \$4.2 million**) and 32 shipments from domestic sources; operation of the In-Tank Precipitation Facility; startup of the Salt Process Cell (SPC) at the **Defense Waste Processing Facility (DWPF)**; stabilization of up to 200 canisters of HLW in DWPF (**total HLW program funding - FY 1998 \$371.6, FY 1999 \$382.7**); treatment of 219 cubic meters of MLLW; continued operation of the Consolidated Incinerator Facility to treat MLLW, LLW and hazardous waste; remediation of 26 release sites; and, landlord. In addition to the funds provided here, \$12.5 million has been requested

within the Cost of Work for Others Program within the Departmental Administration appropriation to support the Foreign Research Reactor SNF Program.

The **multi-site** activities (\$61.6 million) include a small number of essential crosscutting EM activities—including headquarters technical supports efforts, Environmental and Regulatory Analysis, Hazardous Waste Operations and Emergency Response (HAZWOPER), Transportation and Packaging, Emergency Management, Analytical/Characterization Services, and Pollution Prevention—which focus national attention on areas that impact EM-wide goals and Department-wide planned efforts. The consolidation of these multi-site programs allow EM to better coordinate EM-wide and DOE-wide efforts, while leveraging program resources.

The multi-site activities category also includes the federal contribution to the Uranium Enrichment Decontamination and Decommissioning Fund (\$398.1 million).

Science and Technology

The FY 1999 Request includes \$193.0 million for the **Office of Science and Technology**, a decrease of \$53.5 million or 22 percent from the FY 1998 comparable amount. This Office, is comprised of three major program areas—Technology Development and Deployment, Technology Acceptance and Support, and Science and Risk Policy—that provides new or improved cleanup technologies that reduce risks, reduce costs and provide solutions to environmental problems that currently have no solutions. The Technology Development and Deployment program conducts applied research and development activities through Focus Areas to provide new technologies that will help make cleanup within the next decade possible. Also included are deployment support activities designed to facilitate site cleanup by providing a catalyst to stimulate widespread deployment of available alternative technologies. The FY 1999 budget continues activities begun in FY 1998 where competitively selected deployment projects are jointly supported by the Science and Technology program and the user programs to rapidly deploy technologies at DOE sites. Technology Acceptance and Support program ensures technologies which are still in development are ultimately accepted by all parties and used by DOE sites. This program also includes the SBIR assessment in accordance with Public Law 102-564.

Science and Risk Policy includes the EM Science program and the Risk Policy program. The EM Science Program, a collaborative effort between EM and the Office of Energy Research, is a scientific research program focused on identifying long-term, basic science research needs, and targets the research on developing innovative and cost-effective cleanup methods. The Risk Policy program represents a partnership with the Center for Risk Excellence (in Chicago), which has the overall goal of developing and implementing policy, practices, guidance, and tools necessary to support credible risk-based environmental decisions within the EM program.

Program Direction

The FY 1999 Budget Request for **Program Direction** of \$346.2 million is a \$1.2 million, or less than one percent, increase over the comparable FY 1998 amount. Program Direction funding supports a total of 2,869 full time equivalents (FTEs) responsible for the overall direction and administrative support of the Environmental Management program and activities. Four-hundred and forty FTEs (or 15 percent of EM workforce) are located at headquarters (employees based in the Washington, D.C. area), and 2,429 (or 85 percent) are stationed at the major Operations Offices located throughout the country. The funding provides for the salaries, benefits, travel, training, and other related expenses associated with the 2,869 FTEs. This request also includes \$6.8 million for EM's share of the Working Capital Fund.

**Highlights of
Program Changes
(\$ in millions)**

Site/Project Completion (FY 1998 \$965.6; FY 1999 \$1,047.3)		+\$81.7
❖	Albuquerque (FY 1998 \$102.3; FY 1999 \$52.5)	-\$49.8
▶	All responsibilities for newly generated waste will be funded by Defense Programs through the re-engineering effort. (-\$29.4)	
▶	Decreases are associated with the completion of work at various sites and a reduction of low priority activities. (-\$20.1)	
❖	Chicago (FY 1998 \$4.7; FY 1999 \$0.0)	-\$4.7
▶	Decrease reflects the consolidation of all remaining activities in the Non-Defense Environmental Management appropriation. All historically defense-funded activities have been completed.	
❖	Idaho (FY 1998 \$106.6; FY 1999 \$100.6)	-\$6.0
▶	Decrease due to the completion of the Rover Facility Deactivation project, as well as significant progress towards completion of the ICPP Security Facility Consolidation and Electrical Utilities Upgrade line-items in FY 1998. (-\$8.0)	
▶	Increase in mixed low-level waste (MLLW), hazardous and other waste due to an increase in the amount being treated and in the cost for handling and disposing. (+\$1.3)	
❖	Oakland (FY 1998 \$55.8; FY 1999 \$51.7)	-\$4.1
▶	Construction costs for the Defense Waste Treatment Facility are reduced as the project nears planned completion in FY 2001. (-\$4.1)	
❖	Richland (FY 1998 \$273.9; FY 1999 \$350.1)	+\$76.2
▶	Decrease due to completion of N-Area Deactivation in FY 1998. (-\$6.9)	
▶	Increase due to the transfer of vault operations from the Defense Programs to the Environmental Management program and B-Cell clean-out funding transferred from Non-Defense in FY 1998 to Defense in FY 1999. The increase also supports pre-deactivation activities at the 324-327 Facility and the Waste Encapsulation and Storage Facility (WESF). (+\$37.7)	
▶	Increase to support procurement and installation of the PFP Plutonium Stabilization and Handling System. (+\$13.1)	
▶	Increase funding to start operations at the Cold Vacuum Drying Facility and the Canister Storage Building to begin fuel removal operations, and to complete the installation of the Hot Conditioning System equipment. (+\$25.2)	
❖	Savannah River (FY 1998 \$422.2; FY 1999 \$492.3)	+\$70.1
▶	Increase attributed to the construction of the Actinide Packaging and Storage Facility, procurement of long-lead items: beginning K-Reactor modifications to accelerate the receipt of plutonium from Rocky Flats area facilities. (+\$62.0)	

<ul style="list-style-type: none"> ▷ Increase for the canyons to support procurements which exceeded the original cost estimates and to run additional portions of the facilities. (+\$9.0) 	
Post 2006 Completion (FY 1998 \$2,746.9; FY 1999 \$2,673.5)	-\$73.4
❖ Albuquerque (FY 1998 \$130.6; FY 1999 \$79.3)	-\$51.3
<ul style="list-style-type: none"> ▷ Decrease due to overall reduction in funding as release sites and facilities are completed. (-\$14.8) ▷ Decrease in the quantity of transuranic (TRU) waste to be treated, stored and disposed. (-\$5.9) ▷ Decrease due to transfer of all newly generated waste activities to Defense Programs through the re-engineering effort. (-\$28.1) 	
❖ Carlsbad (FY 1998 \$173.9; FY 1999 \$183.6)	+\$9.7
<ul style="list-style-type: none"> ▷ Increase mostly attributable to Contact Handled TRU waste receiving capabilities at WIPP to support increase of receipts from a range of 44 to 67 shipments to a range of 266 to 500 shipments. 	
❖ Idaho (FY 1998 \$300.1; FY 1999 \$311.2)	+\$11.1
<ul style="list-style-type: none"> ▷ Increase reflects transfer of responsibilities for excess Special Nuclear Material (SNM) from the Office of Nonproliferation and National Security. (+\$8.6) ▷ Increase in Foreign Research Reactor fuel receipts and National Spent Fuel Program activities to ensure compliance with the Idaho Settlement Agreement. (+\$7.6) ▷ Decrease due to reduced operations of the New Waste Calcine Facility. (-\$9.0) 	
❖ Nevada (FY 1998 \$69.6; FY 1999 \$74.0)	+\$4.4
<ul style="list-style-type: none"> ▷ Increase for drilling of four wells to meet state requirements at the NTS. (+\$6.3) ▷ Increase for significant acceleration of the TRU project. (+\$2.5) ▷ Decrease to MLLW because most MLLW currently in storage will be disposed of by FY 1999 (-\$0.6). Decrease to LLW due to reallocation of funds to accelerate TRU disposal projects (-\$1.2). (-\$1.8) ▷ Decrease in program support due to the realignment of some waste management regulatory activities to the projects they directly support. (-\$2.8) 	
❖ Oak Ridge (FY 1998 \$222.3; FY 1999 \$183.0)	-\$39.3
<ul style="list-style-type: none"> ▷ Decreases due to: completion of Upper East Fork Poplar Creek RI/FS assessments; initiation of Bear Creek Valley Floodplain hotspot removal; and, start/completion of construction activities at BCV Tributary Interception and Diversion Trench. (-\$9.2) ▷ Decrease to MLLW and LLW programs since Oak Ridge will dispose of 500 fewer cubic meters of each waste. (-\$17.1) 	

❖	Richland (FY 1998 \$658.1; FY 1999 \$652.5)	-\$5.6
▷	Increase due to change in waste types generated through the remediation activities in the 100 Area; buried pipelines are 2 to 3 times more costly than contaminated soil. (+\$7.7)	
▷	Increase due to the construction of the Environmental Restoration Disposal Facility disposal cells 3 and 4, and initiation of design and construction of interim cover. (+\$11.6)	
▷	Decrease due to completion of C Reactor interim safe storage in FY 1998. (-\$10.8)	
▷	Decrease due to the completion of the WESF ion exchange system and low-level liquid waste system. (-\$6.9)	
▷	Decrease in landlord funding due to completion of 219-S Secondary Containment line-item and due to projects costing less in FY 1999 than in FY 1998. (-\$9.9)	
▷	Increase necessary for capital activities to support the private vendor facilities in the High-Level Waste program. (+\$2.3)	
❖	Savannah River (FY 1998 \$707.3; FY 1999 \$730.2)	+\$22.9
▷	Increase due to acceleration of remediation in groundwater treatment and waste site closures. (+\$5.7)	
▷	Decrease due to completion of L-Basin modification work for acceptance of multi types of shipping casks. (-\$3.9)	
▷	Decrease in SNF receipts at RBOF from foreign and domestic reactors. (-\$2.9)	
▷	Increase in Landlord funding to restore funding to forest service, sediment control, wildlife and botany programs, as well as for utilities, transportation, telecommunications and radio equipment. And, an increase for Wackenhut Services due to additional security force requirements. (+\$14.7)	
▷	Decrease in the MLLW, LLW, and Hazardous waste programs due to the reduction in cubic meters treated versus FY 1998. (-\$9.9)	
▷	Increase supports Historically Black Colleges and Universities, South Carolina Universities Research and Education Foundation, South Carolina Water Resources Commission, interagency agreements, site advisory boards, Massie Chair of Excellence, and the Training Center of Excellence. (+\$4.8)	
▷	Increase to support security investigation requirements. (+\$2.2)	
▷	Increase in high-level waste (HLW) program reflects initiation of Replacement High Level Waste Evaporator operations, and the initiation of the Salt Process Cell and Late Wash Facility operations in DWPF ; supports production of 200 canisters of vitrified HLW (FY 1998: 200 canisters). (+\$11.0)	
❖	Multi-Site (FY 1998 \$97.0; FY 1999 \$61.6)	-\$35.4

- ▶ Decrease in technical programmatic support reflects: completion of national geographic information system (-\$2.0); reduction in EM-wide information management activities (-\$0.8); and significant decrease in support associated with program and site baseline assessments, which were completed in FY 1998 (-\$21.6). (-\$24.4)
- ▶ Decrease in analytical/characterization services reflects efficiencies realized through better contracting practices. (-\$2.2)
- ▶ Decrease in pollution prevention results from movement of activities to Defense Programs and the discontinuation of high return-on-investment pollution prevention projects. (-\$8.2)
- ❖ D&D Fund deposit (FY 1998 \$388.0; FY 1999 \$398.1) +\$10.1
 - ▶ Increase reflects three percent increase due to inflation.

Science & Technology (FY 1998 \$246.5; FY 1999 \$193.0) -\$53.5

- ❖ Technology Development and Deployment (FY 1998 \$175.5; FY 1999 \$139.1) -\$36.4
 - ▶ Decrease in mixed waste, characterization and disposal focus area due to the completion of technology demonstrations on the stabilization, separation and removal of salt, ash and mercury (-\$9.6), as well as the completion of melter technologies and a shift away from thermal systems (-\$13.2); offset in part by increases associated with the initiation of transuranic waste technology demonstrations and instrumentation development (+\$5.8). (-\$17.0)
 - ▶ Decrease in radioactive tank waste remediation focus area reflects the completion of hot cell equipment installation and testing and in-tank characterization activities (-\$6.0); and completion of salt-cake dissolution test, solid-liquid separation tests and technical reports, offset by increased support for technologies regarding hard sludge heel retrieval and pretreatment (-\$2.1). (-\$8.1)
 - ▶ Decrease in subsurface contaminants focus area reflects increased efforts related to deep barrier emplacement technologies (+\$3.4), offset by decrease associated with completion of alternative Landfill cover demonstration and other barrier technologies (-\$4.7). (-\$1.3)
 - ▶ Overall decrease in decontamination and decommissioning focus area reflects completion of production reactors D&D demonstrations (-\$5.0) and elector-refining process and characterization technologies for pre and post D&D facility monitoring (-\$11.0); offset by increased efforts for full development and demonstration of Transuranic Contaminated Materials Large Scale Demonstration Project (LSDP) (+\$3.5), Canyon Disposition Initiatives (+\$0.5), Tritium Contaminated Facility D&D LSDP (+\$3.3), and Highly Enriched Uranium Contaminated Facility LSDP (+\$1.0). (-\$7.7)
 - ▶ Increase in plutonium stabilization and disposition focus area reflects the initiation of the new focus area in FY 1999. (+\$4.9)

- ▷ Decrease in university programs reflects reduced efforts on development of continuous emission monitors (-\$2.0), and the completion of various grant activities (-\$5.3). (-\$7.2)
- ❖ EM Science (FY 1998 \$47.3; FY 1999 \$32.0) -\$15.3
 - ▷ Decrease results in no new science research and development grant awards in FY 1999.
- ❖ Risk Policy (FY 1998 \$7.0; FY 1999 \$5.0) -\$2.0
 - ▷ Decrease results in reduced level of support for the Consortium for Risk Evaluation and Stakeholder Participation.
- Program Direction (FY 1998 \$345.0; FY 1999 \$346.2) +\$1.2**
 - ❖ Although it appears that salaries and benefits funding (\$237.1) has increased by \$13.3 million or 6 percent above the FY 1998 level, the real program level in FY 1998 was \$241.1 million. Prior year balances were used to support FY 1998 requirements. (FY 1998 3,003 FTEs; FY 1999 2,869 FTEs) +\$13.3
 - ❖ Travel funding (\$10.1) has been reduced by \$1.9 million or 16 percent from the FY 1998 comparable amount. -\$1.9
 - ❖ Support services funding (\$62.1) has been reduced by \$3.6 million or 6 percent from the FY 1998 comparable amount. -\$3.6
 - ❖ Funding for other related expenses (\$36.8) has been reduced by \$6.6 million or 15 percent from the FY 1998 comparable amount, which does not reflect \$2.9 million in prior year balances used to support FY 1998 activities. -\$6.6

Defense Environmental Management Privatization

Program Overview

The objective of the Defense Environmental Management Privatization program is to reduce the cost of desired products and services by encouraging free-market forces to set the “price” through open competition for fixed price contracts. The selected contractor(s) is responsible for and owns development of technologies, equipment and facilities necessary to deliver the end product or service to EM in accordance with contractual requirements.

The goals of the EM Privatization program are to: remove DOE from activities that are not inherently governmental functions or core business line responsibilities; reduce the cost of doing business; expedite Environmental Management clean-up activities; and, improve the quality and delivery of service by obtaining best-of-class resources within the private sector. Performance measures include: cost savings estimates supported by private sector contract award prices; multiple bidders on procurements; and, contracts without cost growth that meet or underrun schedule requirements and meet technical requirements.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998
Defense Environmental Management Privatization				
Privatization initiatives, various locations	330,000	200,000	516,857	316,857 158.4%

Budget Overview

The FY 1999 budget request of \$516.9 million for the Defense Environmental Management Privatization appropriation is approximately 8 percent of the total FY 1999 budget request of \$6,123.9 million for Environmental Management. Funding provides for the initiation of one new project at Carlsbad, and the continuation of four projects at Hanford, Idaho and Oak Ridge that began in FY 1997 or FY 1998.

FY 1999 Budget Request

The FY 1999 request for Privatization is \$316.9 million, or 158 percent, more than the comparable amount for FY 1998. Total funding, to date (FY 1996 - FY 1999) for the Privatization program is \$1,100.9 million. Budget authority (\$516.9 million) has been requested for the following projects:

Remote Handled Transuranic Waste Transportation, Carlsbad	\$19.6
Advanced Mixed Waste Treatment Project, Idaho	\$87.3
Spent Nuclear Fuel Dry Storage, Idaho	\$30.0
Environmental Management/Waste Management Disposal, Oak Ridge	\$50.0
Tank Waste Remediation System, Phase I, Richland	\$330.0

This authority is set aside to cover contractual obligations, as well as to provide an incentive for private sector investment. In the unlikely event that the Government terminates the contract, these funds would be used to liquidate the termination liability of the government.

Highlights of Program Changes (\$ in millions)

Defense Environmental Management Privatization (FY 1998 \$200.0; FY 1999 \$516.9)		+\$316.9
❖	Remote Handled Transuranic Waste Transportation, Carlsbad — Funding initiates a project to provide transportation of transuranic waste from generator sites to the Waste Isolation Pilot Plant (WIPP) using contractor owned and operated tractor trailer sets and nuclear packaging equipment.	+\$19.6
❖	Advanced Mixed Waste Treatment Project, Idaho — This project began in December, 1996, for the treatment and supporting services for 65,000 cubic meters of alpha and TRU mixed waste located in retrievable storage at the INEEL Radioactive Waste Management Complex (RWMC). Funding provides for about 15 percent of the full funding for the physical construction phase of this project based on the fixed price contract that was awarded. Total funding to date, including the FY 1999 request, is \$157.3 million.	+\$87.3
❖	Spent Nuclear Fuel Dry Storage, Idaho — Project was initiated in FY 1998 and involves the procurement of a dry storage facility capable of transferring and cleaning spent fuel rods. Total funding to date for this project is \$57.0 million.	+\$3.0
❖	Environmental Management/Waste Management Disposal, Oak Ridge — Project initiated in FY 1998 for the purchase of waste disposal services from a private vendor for low-level, hazardous, TSCA defined, and mixed wastes generated at Oak Ridge. Total funding to date is \$55.0 million.	+\$45.0
❖	Tank Waste Remediation Systems, Phase I, Richland — The first of the two phases is a commercial demonstration phase where private vendors would treat sufficient waste to demonstrate to both DOE and to the financial community that they, the private vendors, are capable of treating the remainder of the tank waste in a larger second phase effort. Phase I began in 1996 and could last through 2007 or longer,	

with two vendors treating between 6 and 13 percent of the tank waste. Total funding to date is \$669.0 million. +\$215.0

- ❖ A few projects were fully funded in FY 1998 and will not require any additional funding in FY 1999. -\$53.0

Non-Defense Environmental Management

Program Overview

Although in FY 1998, Congress established the Non-Defense Environmental Management appropriation (formerly part of the Energy Supply Research and Development appropriation), the mission of the program did not change. Continuing in FY 1999, EM is responsible for managing and addressing the environmental legacy resulting from nuclear energy and research activities. The EM program has established a goal of cleaning up as many of its contaminated sites as possible by 2006. The FY 1999 budget request reflects the programs increased emphasis on site closure and project completion.

Budget Overview

The Non-Defense Environmental Management FY 1999 budget request of \$462.0 million is a \$32.0 million, six percent, decrease from the FY 1998 comparable amount. Of the request, approximately 55 percent is for Site Closure, 21 percent is for Site/Project Completion, 18 percent is for Post 2006 Completion, and 6 percent is for Science and Technology. In FY 1998 the Formerly Utilized Sites Remedial Action Program (FUSRAP) was transferred from DOE to the U. S. Army Corps of Engineers.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Non-defense Environmental Management					
Site closure	266,684	269,911	254,344	-15,567	-5.8%
Site/project completion	139,594	113,950	97,248	-16,702	-14.7%
Post 2006 completion	159,478	82,294	83,908	1,614	2.0%
Science and technology	17,463	27,863	26,500	-1,363	-4.9%
Subtotal, Non-defense Environmental Management	583,219	494,018	462,000	-32,018	-6.5%
Use of prior year balances & other adjustments	-11,657	—	—	—	—
Total, Non-defense Environmental Management	571,562	494,018	462,000	-32,018	-6.5%

FY 1999 Budget Request

Site Closure

Of the \$462.0 million requested for Non-Defense Environmental Management in FY 1999, \$254.3 million is for **Site Closure** activities. The requested amount is \$15.6 million, or 6 percent, below the FY 1998 comparable amount. The goal of this program is to clean up and close the sites within this account by FY 2006. After clean-up, there will be no further Departmental presence, with the exception of long-term surveillance and maintenance. The sites in this account currently are under the management of the Albuquerque, Ohio and Oak Ridge Operations Offices.

Albuquerque (\$69.7 million) will manage activities at two sites, the Grand Junction Office in Colorado, and the Monticello millsite in Utah, as well as the **Uranium Mill Tailings Remedial Action (UMTRA) Surface and Groundwater Projects (FY 1999 = \$28.3 million)**. In accordance with the 2006 Plan, EM's goal is to complete the UMTRA Surface

Project by the end of FY 1998 with closeout in FY 1999, and the cleanup of both the Grand Junction Office and Monticello millsite by 2006. Major FY 1999 activities which support these goals include the cleanup of one of the remaining thirteen release sites at the Grand Junction Office, continued cleanup of the Monticello millsite and the closeout of the 400 vicinity properties, and the implementation of active ground water compliance activities at two sites within the UMTRA Groundwater Project.

Ohio (\$119.6 million) supports activities at the Columbus Environmental Management Project (CEMP) and the Miamisburg Environmental Management Project (MEMP) in Ohio, and the **West Valley Demonstration Project (WVDP) (FY 1999 = \$110.1 million)** in New York. Specifically, EM plans to complete the restoration of all three sites by FY 2005, with MEMP transferred to the City of Miamisburg, CEMP returned to Battelle Laboratories for unrestricted use, and WVDP returned to the State of New York by the end of 2006. FY 1999 planned activities which support these goals include the continued restoration and decontamination activities at the West Jefferson Site within CEMP, the decontamination of the Semi-Works Cave at MEMP, and vitrification of high-level waste heels at the WVDP.

Oak Ridge (\$65.0 million) manages the **Weldon Spring Site Remedial Action Project** in Missouri, which is a decommissioned uranium processing plant. EM's goal is to complete all environmental restoration activities at Weldon Spring before 2006. During FY 1999, remedial activities will continue, and two release sites, one facility and six assessments will be completed.

Site/Project Completion

The request of \$97.2 million for the **Site/Project Completion** account continues ongoing efforts to complete, by 2006, projects at national laboratories or other facilities where DOE will continue to have a presence. This amount is \$16.7 million, or 15 percent, below the FY 1998 comparable amount. The sites in this account are currently under the management of the Albuquerque, Chicago, Idaho, Oakland and Richland Operations Offices.

Albuquerque (\$0.5 million) supports continued waste management activities for the cleanup of the Lovelace Biomedical and Environmental Research Institute (formerly Inhalation Toxicology Research Institute) in New Mexico by 2006.

Chicago (\$49.5 million) manages cleanup efforts at seven sites: Ames Lab in Iowa; the Argonne National Lab-East (ANL-E), Site A, and Fermi National Accelerator Lab (Fermi) in Illinois; Argonne National Lab-West (ANL-W) in Idaho; Princeton Plasma Physics Lab in New Jersey; and Brookhaven National Lab (BNL) in New York. EM's goal is to complete all environmental restoration activities at all of these sites, except ANL-E and BNL, by the end of FY 1999. Newly generated waste responsibilities will be transferred to the generating programs beginning in FY 2000, with the exception of Fermi and ANL-W, which were transferred in FY 1998. Major activities planned in FY 1999 include: initiation of surveillance and maintenance activities and continued remediation payments at PPPL; remediation and groundwater activities at BNL; facility decommissioning at ANL-E; continued landlord and program support; and compliant waste treatment, storage and disposal activities at all sites (except Fermi Lab).

Idaho (\$10.3 million) supports the cleanup of three reactor facilities and the construction of a dry storage facility for Three-Mile Island spent nuclear fuel located at the Idaho National Engineering and Environmental Lab (INEEL), as well as the management of the National Low-Level Waste Program. Major activities planned in FY 1999 include: the completion of the dry storage facility and the initiation of fuel transfers; the initiation of deactivation activities for the Materials Test Reactor Canal; the continued deactivation planning for the

Power Burst Facility; and, continued surveillance and maintenance of the Advanced and Fast Coupled Reactivity Measurement Facility (already deactivated).

Oakland (\$35.1 million) supports activities at six sites within California: Lawrence Berkeley National Lab (LBNL), Energy Technology Engineering Center (ETEC), General Electric Vallecitos Nuclear Center (GE), General Atomics facility (GA), Laboratory for Energy-Related Health Research (LEHR), and the Stanford Linear Accelerator Center (SLAC). In addition to managing the restoration and waste management programs at these facilities, Oakland administers grants for the State of California oversight activities. In FY 1999, Oakland will complete 9 assessments, decommission one facility, complete 6 cleanups, continue treatment, storage, and disposal activities associated with transuranic, mixed low-level, low-level and hazardous waste at LEHR, ETEC and LBNL.

Richland (\$1.9 million) manages the stabilization and deactivation of Building 309, the Plutonium Recycle Test Reactor, and Nuclear Energy legacies.

Post 2006 Completion

The FY 1999 request for **Post 2006 Completion** is \$83.9 million. This amount is \$1.6 million, 2 percent, above the FY 1998 comparable amount. The request supports EM cleanup projects that are expected to continue well beyond 2006. The sites in this account are currently under the management of the Oak Ridge Operations Office. This account also includes multi-site and headquarters activities.

Oak Ridge (\$72.8 million) manages the liquid waste treatment operations at Oak Ridge National Lab (ORNL), the facility deactivation and environmental restoration activities at the Oak Ridge Reservation (ORR), and several offsite properties which have been contaminated by Oak Ridge facility operations. EM's goal is to complete the deactivation of all surplus facilities within this program by 2002, half of the remedial actions by 2006, and the remaining half by 2012. The majority of legacy waste will be disposed by 2006, but liquid waste treatment operations will be ongoing throughout the life of ORNL. Major FY 1999 activities include: significant field remediation activities; continued surveillance and maintenance of release sites and deactivated facilities; regulatory cleanup support; surface water and biological monitoring; engineering studies supporting facility decommissioning efforts; and site-wide contract management support related to transition to managing and integrating (M&I) contract.

Multi-site activities (\$11.1 million) include a small number of essential crosscutting EM activities: Program support functions at headquarters; the Packaging Certification and Transportation Safety program; and the non-defense Pollution Prevention program. The consolidation of these multi-site activities allows EM to better coordinate EM-wide and DOE-wide program efforts.

Science and Technology

EM's request for **Science and Technology** is \$26.5 million, which is \$1.4 million or 5 percent below the FY 1998 comparable amount. Science and Technology activities provide new or improved technologies that reduce risks and cost, provide solutions that do not currently exist, and support deployment of innovative EM technologies across the DOE complex. The request supports validation, verification and engineering analysis activities that are necessary to ensure needed environmental data are available to design technical solutions to DOE environmental problems. These activities will be conducted at the Idaho National Engineering and Environmental Laboratory and the Western Environmental Technology Office.

**Highlights of
Program Changes
(\$ in millions)**

Site Closure (FY 1998 \$269.9; FY 1999 \$254.3)		-\$15.6
❖	Albuquerque (FY 1998 \$81.1; FY 1999 \$69.7)	-\$11.4
▶	Increase to complete repository construction and millsite restoration design at Monticello. (+\$10.6)	
▶	Decrease due to closeout of the UMTRA Surface Project (FY 1998 \$35.7; FY 1999 \$22.4), offset by slight increase in UMTRA Groundwater Project (FY 1998 \$5.4; FY 1999 \$5.9). (-\$12.8)	
▶	Decrease reflects shift in activities from demolition to monitoring. (-\$4.4)	
▶	Decrease in landlord cost, due to overall lower program management costs, and the provision of program support activities with prior year funds. (\$-6.0)	
❖	Ohio (FY 1998 \$123.0; FY 1999 \$119.6)	-\$3.4
▶	Decrease at West Valley Demonstration Project (FY 1998 \$114.3; FY 1999 \$110.1) reflects decrease in materials required for vitrification activities, offset by increases in SNF activities associated with the preparation for shipment to Idaho, and at Columbus Environmental Management Project to initiate TRU chemical cleaning process at West Jefferson Site.	
❖	Oak Ridge (FY 1998 \$65.8; FY 1999 \$65.0)	-\$0.8
▶	Slight decrease reflects the transition from the construction of a disposal facility to operation.	
Site/Project Completion (FY 1998 \$113.9; FY 1999 \$97.2)		-\$16.7
❖	Albuquerque (FY 1998 \$0.8; FY 1999 \$0.5)	-\$0.3
▶	Reflects an overall reduction in the volume of waste requiring treatment, storage and disposal.	
❖	Chicago (FY 1998 \$45.7; FY 1999 \$49.5)	+3.8
▶	Reflects overall increase for remediation activities and supports initiation of additional facility D&D and surveillance and maintenance activities (+\$5.6)	
▶	Reflects decrease in overall volume of waste requiring treatment and disposal (-\$1.8)	
❖	Idaho (FY 1998 \$7.2; FY 1999 \$10.3)	+\$3.1
▶	Reflects increase in reactor facility deactivation activities to support the completion of the Material Test Reactor Canal in FY 2000 and the Power Burst Facility in FY 2001. (+\$4.0)	
▶	Reductions due to completion of TMI-2 dry storage facility construction and efficiencies in the National Low Level Waste Program. (-\$0.9)	
❖	Oakland (FY 1998 \$39.6; FY 1999 \$35.1)	-\$4.5
▶	Decrease reflects the completion of fewer release site assessment completions at LBNL and LEHR. (-\$2.3)	

▷	Decrease in landlord costs as equipment divestment and facility turnovers are reduced at ETEC. (-\$1.7)	
❖	Richland (FY 1998 \$20.7; FY 1999 \$1.9)	-\$18.8
▷	Significant decrease reflects the completion of the Building 309 clean out and the stabilization of fuel transfer pit and reactor cavity during FY 1998	
	Post 2006 Completion (FY 1998 \$82.3; FY 1999 \$83.9)	+\$1.6
❖	Oak Ridge (FY 1998 \$68.4; FY 1999 \$72.8)	+\$4.4
▷	Increase field activities associated with remedial actions and release sites. (+\$9.0)	
▷	Increase in facility decommissioning and deactivation activities, as well as initiation of long-term surveillance and maintenance. (+\$1.7)	
▷	Decrease reflects transfer of waste treatment activities to Defense Program Budget. (-\$8.2)	
❖	Savannah River (FY 1998 \$4.2; FY 1999 \$0.0)	-\$4.2
▷	Decrease reflects the deferral of the HWCTR Decommissioning project, due to higher, more critical programmatic activities.	
❖	Multi-Site (FY 1998 \$9.7; FY 1999 \$11.1).	+\$1.4
▷	Increase in headquarters funding reflects: ramp-up of activities due to implementation of national program to receive, treat and store Greater-Than-Class-C sealed sources from private sector licensees (+\$1.6); and the fact that funds supporting essential crosscutting site-wide activities have yet not been allocated to the field (+\$1.4). (+\$3.0)	
▷	Decrease reflects reduced efforts in the Packaging Certification and Transportation Safety Program (-\$0.8), the implementation of no new pollution prevention projects in FY 1999 (10 in FY 1998), and reduced amounts of generated waste (-\$0.8). (-\$1.6)	
	Science and Technology (FY 1998 \$ 27.9; FY 1999 \$26.5)	-\$1.4
▷	Idaho Environmental Technology Validation, Verification and Engineering Analysis.	-\$1.0
▷	Decrease reflects the completion of design and construction of a demonstration test bed. (-\$9.0)	
▷	Increase supports the initiation of systems engineering activities focused on waste disposition within the non-defense appropriation. (+\$8.0)	

Uranium Enrichment Decontamination & Decommissioning Fund

Program Overview

The Energy Policy Act of 1992 established the Uranium Enrichment D&D Fund to carry out environmental management responsibilities at the nation's three gaseous diffusion plants located at Portsmouth, Ohio, Paducah, Kentucky; and the East Tennessee Technology Park (ETTP) (formerly K-25) in Oak Ridge, Tennessee. These responsibilities include decontamination and decommissioning, remedial actions, waste management, ETTP landlord requirements and surveillance and maintenance activities associated with pre-existing

conditions at the plants. The Energy Policy Act also authorizes annual deposits into the Uranium Enrichment D&D Fund of up to \$480.0 million adjusted for inflation. Domestic utilities are to be assessed up to \$150.0 million per year (adjusted for inflation) for 15 years based on their purchase of uranium enrichment services from the Federal Government. The remainder of the annual deposit is authorized to come from annual appropriations.

The Energy Policy Act also requires the DOE to develop and administer a reimbursement program for active uranium and thorium processing sites which sold processed ore to the United States Government. This program assists site owners by compensating them on a per-ton basis for the restoration costs of tailings resulting from the sale of materials to the Federal Government.

Budget Overview

The FY 1999 budget request of \$277.0 million from the Uranium Enrichment D&D Fund is approximately 5 percent of the total FY 1999 Budget Request of \$6,123.9 million for the Environmental Management programs.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998
Uranium Enrichment Decontamination and Decommissioning Fund	210,200	220,200	277,000	56,800 25.8%

The total Environmental Management FY 1999 budget request will be offset by a Federal Government contribution of \$398.1 million into the Uranium Enrichment D&D Fund from the amount appropriated to the Department within the Defense Environmental Restoration and Waste Management appropriation account. In addition, an estimated \$179.0 million from assessments to domestic utilities will be deposited into the Fund. Of the \$277.0 million requested for appropriation from the Uranium Enrichment D&D Fund in FY 1999, \$242.0 million will be used to fund current work scope at the gaseous diffusion plants. The remainder of the request, \$35.0 million, provides for partial payment of approved uranium and thorium reimbursement claims. The balance of the deposits within the Fund will remain in the Fund for future cleanup at the gaseous diffusion plants.

FY 1999 Budget Request

The FY 1999 budget request reflects a \$56.8 million or 26 percent increase over the FY 1998 comparable amount.

Highlights of Program Changes (\$ in millions)

Oak Ridge (FY 1998 \$180.2; FY 1999 \$242.0)	+\$61.8
❖ Reflects the continuation of the British Nuclear Fuels Limited contract , which was mobilized and initiated in FY 1998, to accelerate the cleanup of three processing buildings at ETTP. The FY 1999 request reflects the ramp up of process equipment removal and decontamination. (FY 1998 \$17.2; FY 1999 \$46.0)	+\$28.8
❖ Reflects initiation of ETTP Facility Safety Upgrade, including the risk based decontamination, deactivation, maintenance, and decommissioning of high risk facilities.	+\$9.0
❖ Reflects: significant increase in field work to complete ongoing cleanup on the ETTP ponds, plumes, drum yard, and other release sites at ETTP (+\$13.2); the completion of the demonstration phase of the VORTEC vitrification technology, and increased waste disposal activities at Paducah (+\$5.3); and increased remedial action at Portsmouth (+\$2.1).	+\$20.6

- ❖ Reflects overall increase in long-term surveillance and maintenance activities within the program. +\$3.3

Multi-Site (FY 1998 \$40.0; FY 1999 \$35.0) **-\$5.0**

- ❖ Decrease in payments to Uranium/Thorium licensees in order to support increased cleanup activities at the three plants. Payments will continue in the outyears up to a total liability, as authorized by Congress, of \$415.0 million plus escalation. To date approximately \$158.0 million has been paid.

Defense Nuclear Waste Disposal

Mission

The Defense Waste Disposal Fund supports the activities necessary to dispose of high-level waste generated from atomic energy defense activities. Appropriations from this fund support the Office Civilian Radioactive Waste Management's Yucca Mountain Site Characterization Project and Waste Acceptance, Storage and Transportation Project which are described in greater detail in the Nuclear Waste Disposal Fund Section of the Budget Highlights. The FY 1999 budget request is \$190.0 million.

Power Marketing Administration

Mission

The Power Marketing Administrations (PMAs) market electricity generated primarily by Federal hydropower projects. Preference for the sale of power is given to public bodies and cooperatives. Revenues from selling power and transmission services of the five PMAs are used to repay the U.S. Treasury annual operation and maintenance costs, repay the capital investments with interest, and assist capital repayment of other features of certain projects.

Program Overview

Alaska Power Administration

The Alaska Power Administration (APA) owns, operates, maintains, and markets power from the 78 megawatt Snettisham Project near Juneau, Alaska, providing approximately 85 percent of Juneau's power requirements. The Power Administration Asset Sale and Termination Act (Public Law 104-58) authorizes and directs the Secretary of Energy to sell the assets of APA in accordance with previously negotiated purchase agreements and to terminate the agency. APA's former 30 megawatt Eklutna Project near Anchorage was sold to the three current power customers, Anchorage Municipal Light and Power, Chugach Electric Association Inc., and Matanuska Electric Association, Inc., on October 2, 1997. The Snettisham Project will be sold to an agency of the State of Alaska by the end of FY 1998. A total of \$85.0 million is expected to be realized from the sale of APA assets, with final APA termination expected by mid-1999.

Southeastern Power Administration

The Southeastern Power Administration sells wholesale power generated at 23 Federal hydroelectric generating plants in eleven southeastern states primarily to publicly and cooperatively owned electric distribution utilities. Since Southeastern does not own or operate any transmission facilities, power is delivered by utilizing the transmission systems of the electric utilities in the area. This is accomplished through wheeling agreements with the region's large private utilities with transmission lines connected to the projects, to provide firm power to Southeastern's customers. In FY 1999, Southeastern proposes to utilize \$28.0 million in preference customer advances to fund over half of its purchase power and wheeling program, whereby preference customers will pay directly for as many transmission and ancillary services as possible including all of the purchase power requirements of the Russell project.

Southwestern Power Administration

The Southwestern Power Administration operates within a six-state area as a marketing agent for hydroelectric power produced at 24 U.S. Army Corps of Engineers multipurpose projects and sells power at wholesale rates primarily to publicly and cooperatively owned electric utilities. To integrate the operation of the hydroelectric generating plants and to transmit power from the dams to its customers, Southwestern maintains 2,225 kilometers (1,380 miles) of high-voltage transmission lines, 24 substations, and 46 microwave and VHF radio sites.

Western Area Power Administration

The Western Area Power Administration markets and provides transmission of federal and non-federal electric power in 15 central and western states encompassing about 40 percent of the total area of the contiguous United States from 55 federally owned hydropower plants operated primarily by the Bureau of Reclamation, U.S. Army Corps of Engineers, and the International Boundary and Water Commission. Western also markets the United States' entitlement from the Navajo coal-fired power plant near Page, Arizona. These activities are accomplished through a combination of appropriated funds and revenue collections. Western maintains an existing infrastructure of over 16,850 circuit miles of transmission line and 258 substations. To firm up federal hydropower supplies needed to meet Western's contractual obligations, Western purchases power from others and transmission services when a third party's transmission lines are needed to deliver federal power. Western also conducts work for other federal entities under reimbursable agreements and for non-federal entities under the Contributed Funds Act.

Bonneville Power Administration

The Bonneville Power Administration provides electric power, transmission and energy services to a 300,000 square mile service area in the Pacific Northwest. Bonneville sells at wholesale the power produced at a total of 29 federal projects, operated by the Corps of Engineers and Bureau of Reclamation and from certain non-federal hydro and thermal generating facilities. Bonneville provides about 80 percent of the Pacific Northwest region's electric power transmission capacity utilizing over 23,800 circuit kilometers (about 14,800 circuit miles) of transmission lines and about 400 substations. Operating on a self financed revolving fund basis, Bonneville does not require appropriations to finance its day to day operations. It does, however, utilize borrowing authority for its capital investment activities. Bonneville funds the expense portion of its budget and repays the Federal investment with revenues from electric rates.

Budget Overview

Overall, the budget requests for the Power Marketing Administrations, excluding Bonneville increase by \$4.4 million in FY 1999. This increase is comprised of a total decrease of \$31.8 million in the program levels for the Western Area Power Administration (-\$12.1 million), the Alaska Power Administration (-\$13.5 million), the Southeastern Power Administration (-\$5.7 million), and the Southwestern Power Administration (-\$0.5 million), offset by a \$36.2 million decrease in prior year balances available to offset FY 1999 requirements, resulting in a net increase of \$4.4 million. Bonneville Power Administration proposes to obligate \$258.0 million of its borrowing authority in FY 1999, and will have net outlays of \$46.0 million.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Power Marketing Administrations:					
Alaska power administration	4,000	13,500	—	-13,500	-100.0%
Southeastern power administration	27,445	16,222	10,500	-5,722	-35.3%
Southwestern power administration	27,804	26,500	26,000	-500	-1.9%
Western Area Power Administration					
Western area power administration	248,691	230,124	223,576	-6,548	-2.8%
Transfer of current authority from DOI	3,774	5,592	—	-5,592	-100.0%
Total, Western Area Power Administration	252,465	235,716	223,576	-12,140	-5.2%
Falcon & Amistad operating & maintenance fund . .	970	970	1,010	40	4.1%
Colorado River Basin Power Marketing Fund					
Spending authority from offsetting collections .	120,431	124,786	100,661	-24,125	-19.3%
Offsetting collections	-130,431	-140,884	-116,759	24,125	17.1%
Total, Colorado River Basin	-10,000	-16,098	-16,098	—	—
Subtotal, Power Marketing Administrations:	302,684	276,810	244,988	-31,822	-11.5%
Use of prior year balances	-80,141	-46,371	-10,141	36,230	78.1%
Total, Power Marketing Administrations	222,543	230,439	234,847	4,408	1.9%
Bonneville Power Administration (non-add)					
Budget authority	(16,000)	(-25,000)	(-46,000)	(-21,000)	(-84.0%)
Capital obligations	(209,000)	(253,000)	(258,000)	(5,000)	(2.0%)
Full time equivalent employment (FTEs)					
Alaska Power Administration	10	11	8	-3	-27.3%
Bonneville Power Administration	2,929	2,930	2,755	-175	-6.0%
Southeastern Power Administration	41	41	41	—	—
Southwestern Power Administration	175	189	186	-3	-1.6%
Western Area Power Administration	1,100	1,168	1,168	—	—
Colorado River Basin Power Marketing Fund	152	161	161	—	—
Total, Full time equivalent employment (FTEs)	4,407	4,500	4,319	-181	-4.0%

The FY 1999 budget requests for the Power Marketing Administrations continue their commitments of service to their customers at the lowest possible rates while maintaining repayment to the Treasury. The Program Direction decision unit includes the majority of funding for the Southwestern and Western Area Power Administrations. Although Southeastern Power Administration's mission activities are contained in the Program Direction decision unit, over 90 percent of this funding is included in the Purchase Power and Wheeling decision unit. With the capital side of the Bonneville Power Administration, Bonneville meets its capital investment requirements for transmission, power, fish and wildlife, energy efficiency and capital equipment. Bonneville's fish and wildlife capital program implements the Administration's agreement on Bonneville Power Administration fish and wildlife support.

**FY 1999 Budget
Request****Alaska Power Administration**

No funding is requested for APA in FY 1999 due to the expected termination of the agency.

Southeastern Power Administration

The Southeastern Power Administration (SEPA) FY 1999 total program level is \$38.5 million. Of this amount, \$8.5 million is new budget authority and \$28.0 million is customer advances, and \$2.0 million in prior year balances. The vast majority of this total funding level provides payment for purchases of pumping energy and wheeling charges which are required for the delivery of power to customers. The remainder funds program direction requirements for 41 FTEs. SEPA will market all available power giving preference to public bodies and cooperatives, maintain repayment of the Federal investment by limiting the increase in average power costs to less than that of the Consumer Price Index, and limit the increase in transmission costs to less than that of the Consumer Price Index through utilization of area transmission systems.

SEPA's FY 1999 budget request continues to use the FY 1998 approach of using customer reimbursements. Customer advances will be utilized to pay for transmission wheeling and ancillary services needed to deliver power to some preference customers, and to pay for power purchases required to operate the Russell project. It is SEPA's policy to encourage customers to contract independently of SEPA for transmission services. However, a blanket application of this policy could lead to sub-optimization of the federal resource, thereby increasing per unit costs and negatively impacting repayment to the Treasury. Therefore, SEPA will review each case to assure there are not negative impacts on the marketability of the federal resource.

Southwestern Power Administration

The Southwestern Power Administration FY 1999 funding level is \$26.0 million. The majority of the funding is dedicated to program direction for 186 FTEs to conduct all activities connected with the marketing and delivery of federally generated hydroelectric power to customers; transmission line, substation and communication system maintenance; and for equipment replacements at facilities associated with the transmission system.

In FY 1999, Southwestern will market and deliver all available hydroelectric power as measured by the amount of firm capacity and associated energy delivered, economic benefits realized, and fossil fuels saved. Secondly, Southwestern will maintain and operate the transmission system as measured by the North American Electric Reliability Council Standard, the System Average Interruption Duration Index, and the implementation of open access tariffs. Southwestern will also repay the federal investment as measured by the cumulative status of repayment, the ratio of cumulative principal payments to the total federal investment, and a 1.0 debt service ratio.

Western Area Power Administration

The Western Area Power Administration FY 1999 Construction, Rehabilitation, Operation and Maintenance program is funded at a total of \$223.6 million. Of this amount, \$215.4 million is new budget authority and \$8.1 million is use of prior year balances. Over half of the total funding, \$107.4 million, covers program direction for 1,168 FTEs who perform operations, maintenance and construction activities associated with Western's transmission system and other power marketing activities. Another significant portion of Western's funding, \$53.9 million, provides for the purchase power and wheeling program which obtains electrical resources and transmission services needed to firm up federal hydroelectric power supplies to meet Western's contractual obligations.

The remaining funding includes: \$36.5 million for Western's operation and maintenance program which provides materials, supplies, equipment, and technical services used in direct support of the operation and maintenance of the interconnected power system; \$20.8 million for construction and rehabilitation activities which include replacements and upgrades of Western's existing infrastructure; and \$5.0 million is included for Western's contribution to the Utah Mitigation, Reclamation and Conservation account. A total of \$1.0 million is requested for the operation and maintenance of the hydroelectric facilities at the Falcon and Amistad dams. Operation of the Colorado River Basins Power Marketing program on a revolving fund basis continues at an estimated FY 1999 level of \$100.7 million in spending authority from offsetting collections with a level of 161 FTEs.

In FY 1999, Western will seek the following four performance objectives: maintain a power system reliability level that exceeds the acceptance levels for Control Performance Standards being initiated by the North American Electric Reliability Council; maintain a safety record better than the industry average as measured by lost workday frequency rate; control cost growth in regular operation and maintenance to no more than the annual rate of inflation; and secure principal repayment equal to or greater than that planned for the fiscal year.

Bonneville Power Administration

In FY 1999, the Bonneville Power Administration budget includes \$258.0 million in borrowing authority for capital investments. These investments provide electric utility and general plant associated with the Federal Columbia River Power System's transmission services, capital equipment, hydroelectric projects, conservation and capital investments in environment, fish and wildlife. About half of the capital investments in FY 1999, \$136.0 million, are for the transmission services element to provide for additions, upgrades and replacements to the federal transmission system and for pollution prevention and abatement activities in compliance with environmental laws and regulations and to mitigate environmental risks associated with operation of the power system. A total of \$9.0 million is included for the conservation programs. Funding of \$27.0 million is allocated to resource protection, enhancement and mitigation of Columbia River Basin fish and wildlife losses attributed to the development and operation of federal hydroelectric projects on the Columbia River and its tributaries.

In FY 1999, Bonneville will strive for the following outputs:

- ❖ Improved overall customer satisfaction;
- ❖ Increase the value of the BPA business and sharing of benefits;
- ❖ Be the lowest cost producer of power and transmission services;
- ❖ Maintain financial integrity;
- ❖ Maintain a recordable injury rate below the industry average and beat the competitive benchmark for system average interruption frequency index;
- ❖ Keep the power system safe and reliable;
- ❖ Invest in environmental results to maintain its competitiveness; and,
- ❖ Transform itself into a high-performing business oriented organization.

Bonneville's FY 1999 budget has been prepared on the basis of its three major areas of activity; power, transmission and conservation and energy efficiency services. This new structure supports Bonneville's reorganization undertaken to become more competitive in the rapid restructuring of the deregulated wholesale electric energy market. This industry

deregulation stems largely from the 1992 Energy Policy Act and ensuing Federal Energy Regulatory Commission (FERC) orders, (FERC orders 888 and 889) requiring separation of utilities' power and transmission functions. As a Federal agency, Bonneville is not bound by law to comply with the orders, but chose to comply with the FERC orders because it views compliance as essential to successfully compete in the electric power market of the future. Further, Bonneville supports DOE's October 1995 "Power Marketing Administration Open Access Policy".

Bonneville's budget also reflects the utility business and public benefits forecast in Bonneville's 1996 rate case filed with FERC which became effective October 1, 1996. Bonneville's budget estimate will have to change to enable Bonneville to meet its statutory responsibilities and fulfill its legislative and executive obligations as the electric utility industry evolves. This changing environment includes the final recommendations of the Comprehensive Review of the Northwest Energy System (the Regional Review) which was convened on January 4, 1996, by the governors of Idaho, Montana, Oregon, and Washington. The Regional Review was conducted by a special independent steering committee. It served as a forum for discussion about the restructuring of the electric utility industry and what it will mean to the Pacific Northwest. The governors received the Regional Review proposal on December 12, 1996. The proposal recommends legislatively splitting Bonneville into two agencies. The report recognizes Bonneville's need to recover costs, but no process is outlined. The review does not address fish and wildlife funding after 2001 or river governance. The governors appointed a transition board to prepare a strategic plan on implementing the regional review's report. The Northwest Congressional delegation asked the Transition Board in June, 1997 to initiate a review of Bonneville's cost management issues. A report on these activities will be submitted to Congress by March, 1998.

Highlights of Program Changes (\$ in millions)

Alaska Power Administration **-\$13.5**

No funds requested due to the termination of the agency.

Southeastern Power Administration **-\$5.7**

Program direction increases \$0.1 million from \$4.3 million to \$4.4 million due to the cost of living raise and the purchase of ADP equipment/software, and inflation increases. This increase is offset by a \$5.8 million decrease in purchase power and wheeling which is comprised of an increase of \$2.2 million in the total program (\$43.7 million in FY 1998 to \$45.9 million in FY 1999), due to purchase power requirements for a full year's operation of the Russell project offset by an \$8.0 million increase in the use of reimbursements in FY 1999 necessary to cover the entire purchase power requirement of the Russell project.

Southwestern Power Administration **-\$0.5**

Operations and maintenance increases by \$0.3 million, from \$2.4 million to \$2.7 million, due to efforts to maintain the transmission system right-of-ways, the replacement of deteriorated poles and related hardware, and vehicle and equipment maintenance. Construction overall has no significant change at \$0.1 million increase from \$6.7 million to \$6.8 million. However, while vehicle replacements decrease by 44 percent, transmission system replacements increase by 7 percent. Program Direction decreases by \$0.9 million, from \$17.3 million to \$16.4 million, due to Southwestern's efforts to streamline the organization by reducing salary, benefits, travel and relocation expenses due to FTE reductions and by negotiating a new building lease. This streamlining effort is designed to shift funding from program direction to direct program support of transmission

system replacements in the Operations and Maintenance and Construction budgets.

Western Area Power Administration

-\$12.1

Construction, Rehabilitation, Operation and Maintenance Program: Program Direction decreases \$2.5 million from \$109.8 million to \$107.4 million due to decreases of \$3.7 million permanent authority authorized for the Boulder Canyon Project and \$0.9 million in support services offset by an increase of \$2.1 million in salaries, benefits, and travel due primarily to government-wide pay raises. Operation and Maintenance decreases \$4.7 million from \$41.2 million to \$36.5 million due to a decrease of \$1.9 million in permanent authority for the Boulder Canyon Project and a decrease of \$2.8 million in supplies, materials, and equipment. Purchase Power and Wheeling decreases \$1.0 million from \$54.9 million to \$53.9 million due to expansion of non-appropriated financing of \$2.0 million in the Pick-Sloan Missouri River Basin offset by an increase of \$1.0 million in the Central Valley Project due to constraints on their alternative financing programs. Construction and Rehabilitation decreases \$3.4 million from \$24.2 million to \$20.8 million due to continuation of aggressive reduction in these capital investments in order for Western and its customers to remain as competitive as possible in the rapidly changing electric utility industry. The Utah Mitigation and Conservation account decreases \$0.6 million from \$5.6 million to \$5.0 million as necessary to support the Administration's balanced budget goals.

Colorado River Basins Power Marketing Fund

\$0.0

The net budget authority of -\$16.1 million in FY 1998 remains the same in FY 1999 as the operating expenses and offsetting collections are both decreasing by \$24.1 million. The operating expenses are decreasing from \$124.8 million to \$100.7 million due primarily to a decrease of \$25.8 million for purchase power and \$2.2 million in interest payments to the Treasury offset by an increase of \$1.0 million in program direction and \$2.9 million for system replacements, supplies and materials.

Bonneville Power Administration

-\$6.0

Power Business Line program activity increases \$24.0 million from \$50.0 million to \$74.0 million due to additional improvements and replacements of existing U.S. Bureau of Reclamation and Corps of Engineers hydroelectric projects. Transmission Services decreases \$10.9 million from \$146.7 million to \$135.8 million due to the implementation of reliability centered maintenance and replacement practices which dictate that non critical transmission equipment will only be replaced at failure. Conservation and Energy Efficiency activities decrease \$17.3 million from \$26.2 million to \$8.9 million due to the closeout of conservation acquisition programs consistent with BPA's new approach to developing conservation resources through the use of non-government funds.

Federal Energy Regulatory Commission

Mission

The Commission regulates essential interstate aspects of four of the nation's critical energy industries: electric power transmission and sales for resale, natural gas transportation and sales for resale, oil pipeline transportation, and nonfederal hydroelectric power. The Commission ensures that the rates, terms and conditions of service for the electric power, natural gas, and oil industries are just and reasonable and not unduly discriminatory or preferential, and that licensing, administration, and safety actions for the hydropower industry and other approvals for all four industries are consistent with the public interest.

Program Overview

In FY 1999, the Commission will maintain its focus on environmental issues and compliance in all program areas. In addition, the Commission will continue to encourage competitive markets where appropriate, while maintaining more traditional forms of regulation where competitive markets do not exist or market forces do not work to protect the public interest. This will be accomplished through on-going implementation of the Energy Policy Act of 1992 and other authority under the Federal Power Act, including reducing barriers to competition and generation in the electric power industry. Since passage of the Act, the Commission has aggressively pursued policies designed to foster competition in wholesale electric power markets. In April, 1996, the Commission issued Order No. 888, which requires all public utilities that own, control, or operate electric transmission facilities to provide nondiscriminatory open access transmission services and allows utilities to seek full recovery of stranded costs. A companion order, Order No. 889, requires nondiscriminatory access to information about electric transmission facilities. With implementation of these initiatives, the Nation will see the most sweeping transformation in the electric power industry since the passage of the Federal Power Act in 1935.

This expanded competition also is changing the economics and conditions under which hydroelectric projects are developed and operated. Passage of Order No. 596 in October, 1997 gives the hydroelectric power industry additional alternatives for preparing project proposals. These alternatives are designed to help resolve issues, achieve settlements, and complete environmental documents before applications are filed, to speed Commission decisions after filing.

Budget Overview

The Commission's budget request for FY 1999 is \$168.9 million, about a 4 percent increase over total FY 1998 funding, which included the use of prior years' unobligated balances. This request funds 1,377 FTEs, the same number as in FY 1998. The Commission will recover the full cost of its operations through a system of annual charges and fees, to be retained and made available until expended without further appropriation in FY 2000.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Federal Energy Regulatory Commission					
Federal Energy Regulatory Commission	156,290	165,620	168,898	3,278	2.0%
Use of prior year balances (FERC)	-10,000	—	—	3,479	100.0%
FERC Offsetting Collections	-146,290	-165,620	-196,958	-31,338	-18.9%
Total, Federal Energy Regulatory Commission	—	—	-28,060	-28,060	—
Fees & recoveries in excess of appropriation					
	-46,049	-22,000	—	22,000	100.0%
Full Time Equivalent Employment (FTEs)					
	1,335	1,377	1,377	—	—

Highlights of Program Changes (\$ in millions)

The FY 1999 budget request reflects the Commission's changing regulatory priorities, resulting from three factors: 1) the need to process the huge surge in workload and respond to the changing needs of the electric power industry as the Commission continues to implement the restructuring of the industry and addresses major issues such as open-access and stranded costs; 2) the pursuit of new strategic and structural arrangements to further the competitive initiatives of Order Nos. 436, 500, and 636 for the natural gas pipeline industry; and 3) the filing of the first group of relicense applications for projects with licenses that expire between 2000 and 2010, many of which are large capacity projects composed of several developments.

Nuclear Waste Disposal Fund

Mission

The mission of the Office of Civilian Radioactive Waste Management is to manage and dispose of the Nation's spent nuclear fuel and high-level radioactive waste. The Office of Civilian Radioactive Waste Management (OCRWM) provides leadership in developing and implementing strategies to accomplish this mission to assure public and worker health and safety, protect the environment, merit public confidence, and are economically viable.

Program Overview

The office was established by the Nuclear Waste Policy Act of 1982. The Act established responsibility and a framework to provide for the permanent disposal of spent nuclear fuel from commercial utilities and high-level radioactive waste generated from atomic energy defense activities. The Nuclear Waste Policy Amendments Act of 1987 designated the Yucca Mountain, Nevada, site for detailed scientific investigation to evaluate the site's suitability for a geologic repository. Activities performed by the program include core scientific work and additional excavation of the Exploratory Studies Facility at Yucca Mountain, waste package and repository design, and planning for the transfer and transportation of waste to the Federal Government from the owners and generators of spent fuel and high-level radioactive waste.

OCRWM continues to focus on the schedule and milestones described in the draft revised Program Plan. The draft revised Program Plan refocused the program activities to emphasize core scientific activities at Yucca Mountain. The draft revised Program Plan defines four near-term objectives that will maintain the momentum toward a National decision on the geologic disposal option: complete the updating of the regulatory framework for the Yucca Mountain site; completion of the viability assessment for Yucca Mountain in 1998; recommendation of the repository site to the President in 2001 if the site is suitable; and submission of a License Application for constructing a repository to the Nuclear Regulatory Commission in 2002.

Budget Overview

The Civilian Radioactive Waste Management Program has been funded through two appropriations: the Nuclear Waste Fund, and the Defense Nuclear Waste Disposal appropriation. The Nuclear Waste Disposal Fund is financed by fees from the ratepayers of nuclear utilities. The Defense contribution is a general fund appropriation to offset the costs of disposing of the Department's high-level waste generated from atomic energy defense activities. The FY 1998 appropriations provide a total funding level of \$346.0 million. Of the \$346.0 million appropriated, \$267.7 million is allocated to Yucca Mountain Site Characterization efforts which will support the completion of the Viability Assessment in 1998. \$5.9 million will be allocated to the continuation of waste acceptance, storage and transportation activities. The remaining funding of \$72.4 million will directly support Site Characterization and WAST activities; and fund federal salaries and other program direction activities. The program is continuing preclicensing activities with the Nuclear Regulatory Commission and regulatory interaction with the Environmental Protection Agency. Upon the completion of its evaluation of the viability assessment, the program will prepare the additional information required for a suitability determination by the Secretary of Energy and

a site recommendation to the President and the License Application to the Nuclear Regulatory Commission.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Nuclear Waste Fund — Financing					
Nuclear waste disposal fund	182,000	156,000	190,000	34,000	21.8%
Defense nuclear waste disposal	200,000	190,000	190,000	—	—
Total, Nuclear Waste Fund	382,000	346,000	380,000	34,000	9.8%
Nuclear Waste Fund — Activities					
Yucca mountain site characterization	299,459	267,710	297,823	30,113	11.2%
Waste acceptance, storage and transportation	9,360	5,947	10,505	4,558	76.6%
Program Integration	11,146	9,863	11,183	1,320	13.4%
Program Direction	62,035	62,480	60,489	-1,991	-3.2%
Total, Nuclear Waste Fund	382,000	346,000	380,000	34,000	9.8%
Full time equivalent employment (FTEs)	225	206	187	-19	-9.2%

The viability assessment is a major milestone to address the unresolved technical questions regarding the conceptual design of the repository and its expected performance in the geological setting. Components of the viability assessment are a set of deliverables that are consistent with the guidance in the FY 1997 Energy and Water Development Appropriations Conference report. The viability assessment will include: the preliminary design concept for the critical elements for the repository and waste package; a total system performance assessment, based upon the design concept and the scientific data and analysis available by June 30, 1998, describing the probable behavior of the repository in the Yucca Mountain geological setting relative to the overall system performance standards; a plan and cost estimate for the remaining work required to complete a license application; and an estimate of the costs to construct and operate the repository according to the design concept.

FY 1999 Budget Request

The FY 1999 budget request is for a total of \$380.0 million of which \$190.0 million is to be derived from the Nuclear Waste Disposal Fund, and \$190.0 million is to be derived from Defense Nuclear Waste Disposal. The FY 1999 request allocates \$297.8 million to continue characterization of the Yucca Mountain site. With the completion of the Viability Assessment in 1998, FY 1999 is a critical transitional year for the Office of Civilian Radioactive Waste Management program, particularly with respect to the Yucca Mountain Site Characterization Project.

In prior fiscal years, the program devoted significant resources to the construction/operations arena. The program constructed, using a tunnel boring machine, a unique underground laboratory (Exploratory Studies Facility) that gives direct access to the proposed repository block to obtain necessary scientific data. OCRWM is accelerating the transition of the Yucca Mountain Site Characterization Project from one that focused on essential basic scientific data collection to a project whose major emphasis is on key model validation, data synthesis and analysis. This suite of activities supports the continued refinement of engineering and designs for the waste package and repository that, in turn, are essential to the Program's ability to achieve key outyear milestones.

In addition, the request provides \$10.5 million for waste acceptance, storage and transportation activities. This includes activities to continue advancements for a market-driven initiative to create a national transportation capability to remove spent nuclear fuel from reactor sites. OCRWM also plans to use the market initiative for awarding contracts to the private sector for canister, transport cask and storage module production, and waste acceptance and transportation services.

The request also provides \$11.2 million for program integration activities, which include systems and regulatory integration, strategic planning, and program and information management.

The program direction portion of the request is \$60.5 million. These activities include funding for federal salaries, benefits, travel, support services and other related services.

The program is committed to achieving three key milestones in FY 1999. The three milestones consist of issuing the Draft Environmental Impact Statement; completing of elements for the design the Total System Performance Assessment (TSPA); and completing the peer review of the TSPA component of the viability assessment. The planned and ongoing technical, scientific, and environmental documentation activities continue to be critical to the program's ability to accomplish the issuance of the final Environmental Impact Statement in 2000; Site Recommendation to the President by 2001; and the submittal of the License Application to the Nuclear Regulatory Commission by 2002.

Highlights of Program Changes (\$ in millions)

Yucca Mountain Site Characterization **+\$30.1**

- ❖ Increase in operations and construction to support upgrades to major Exploratory Studies Facilities systems; construction of Cross Drift alcoves and niches; and additional excavation associated with characterizing the tunnel. (+\$21.2)
- ❖ Increase in design and engineering of the site, surface and subsurface design and the Total System Performance Assessment-License Application activities which support the Site Recommendation, License Application. (+\$15.8)
- ❖ Decrease in program management reflects completion of the baseline data collection; and near completion of the environmental impact analyses. (-\$7.2)

Waste Acceptance, Storage & Transportation **+\$4.6**

- ❖ The increase is associated with the issue of the draft Request for Proposal for waste acceptance and transportation services that includes canister, transport cask and storage module production.

Program Direction **-\$1.9**

- ❖ The decrease is the result of reduced requirements for support service contractors related nearly completed draft Environmental Impact Statement.

Fossil Energy Research and Development

Mission

The mission of the Fossil Energy (FE) Research and Development (R&D) program is to stimulate sustainable development and utilization of the Nation's fossil fuel resources and technologies to assure an ample, secure, clean and low cost domestic supply of energy. This mission will be executed in a way that assures U.S. global leadership in fossil energy technology; protects the local, regional and global environment; merits public trust; promotes public-private partnerships; and contributes to a stronger economy.

Program Overview

The U.S. is reliant on fossil fuels for about 85 percent of the energy it consumes and is expected to remain dependent on fossil fuels for the next twenty years. A key goal of the Department's fossil energy activities is to ensure that economic benefits from low-priced fossil fuels, a strong domestic industry, and export-related jobs do not come with unacceptable environmental costs or energy security risks.

The programs in this budget include a portfolio of activities designed to accomplish this goal. Environmental concerns pose threats to the continued development and utilization of all fossil fuels.

For electric power generation there are multiple issues related to environmental protection. Post-2000 sulfur dioxide (SO₂) emissions will be capped; permissible nitrogen oxide (NO_x) emissions will be in the single digit parts per million levels for much of the country; allowable particulate emissions may be further constrained due to air toxic and other health considerations; land constraints will increase pressure to reduce disposal of solid residue resultant from power generation systems; and international pressure to reduce greenhouse gas emissions, principally carbon dioxide (CO₂), will likely increase. R&D addressing these concerns is funded under the Coal and Gas programs, and includes R&D on clean power systems that will achieve 65 percent efficiencies, no net carbon dioxide emissions and produce power at a low cost, competitive with the best pulverized coal plants.

Natural gas can also help the U.S. meet many of its environmental goals. Yet, to ensure the long-term supply and affordability of our cleanest fossil fuel, continued R&D is needed to improve exploration, production, processing, and storage technologies. Much of the Nation's natural gas resources is locked in complex, difficult-to-produce formations. In many existing fields, natural gas has been bypassed by conventional exploration and production technologies. More than a quarter of our known gas supply is below pipeline quality and cannot be used unless upgraded. A potentially vast quantity of natural gas exists in remote regions and could remain unmarketable unless lower-cost approaches (such as gas-to-liquids conversion) are developed to transport this gas to waiting markets. Guided by industry's advice, the Department's FY 1999 budget will continue cost-sharing partnerships with the private sector to address these and other issues that are critical to ensuring long-term consumer confidence in the availability of affordable natural gas supplies.

The availability of reliable oil supplies is also key to our future economic growth and to national energy security. The U.S. currently depends on imports for almost half of its oil

supplies, and by 2015 this dependence is projected to increase to more than 60 percent, with supplies increasingly concentrated in historically unstable regions of the world. At the same time, U.S. oil production continues to decline as wells with high remaining production potential continue to be abandoned. To concentrate its resources on the most pressing problems, the Department's Fossil Energy program has integrated its R&D activities in petroleum and natural gas to take maximum advantage of technologies that benefit both oil and gas production, for example the development of advanced seismic technologies, new drilling systems, and more cost-effective environmental compliance options.

This R&D could help stabilize domestic oil production beginning around the year 2005, perhaps increasing the flow of oil from U.S. fields by as much as one million barrels of oil per day by 2015. Advanced technologies developed in the cost-shared program with industry could also contribute directly to more than a quarter of the additional 6 trillion cubic feet per year of domestic gas production likely to be needed by 2010 to meet energy and environmental demands. Also, by working with industry and federal, state and local regulatory authorities to ensure that risk-based environmental protection measures are scientifically sound and can be effectively implemented at potentially reduced costs, the Department can ultimately help reduce environmental compliance costs in the oil and gas industry by \$16.0 billion by 2010, allowing more resources to be applied to finding and producing needed supplies of domestic fuels.

The Advanced Metallurgical Processes Program is a new budget title for the research activities at the Albany, Oregon Research Center which were transferred to the Department of Energy in FY 1996. The Center's expertise in new materials technologies has enhanced the Department's efforts to develop more durable, higher-strength and more reliable materials for advanced fossil energy technologies. Research at the Center is also benefitting a wide spectrum of U.S. industry by identifying factors that limit service life of materials in industrial, structural, and engineering applications, and by providing solutions that enhance the service life of metals and other materials.

Budget Overview

The FY 1999 request for Fossil Energy Research and Development is \$383.4 million, a six percent increase from the FY 1998 level. The increases would go to new investments in advanced technological concepts that could reduce, or perhaps nearly eliminate, carbon emissions from fossil fuel facilities. **These new investments have been included in the President's Climate Change Technology Initiative (CCTI).** For a world that is nearly 90 percent dependent on fossil fuels, the development of new technologies for more affordable greenhouse gas control could improve the likelihood of a truly global commitment to meeting the challenges of climate change.

The FY 1999 DOE program also responds to the natural gas and petroleum-related recommendations of the President's Committee of Advisors on Science and Technology (PCAST). Emphasis continues to be given to technology transfer, especially to independent producers that make up an increasingly large share of the domestic oil and gas industry. The FY 1999 program also includes support for follow-on advanced oil recovery projects, especially where prior field tests have shown that such projects could be the difference in keeping oil flowing in fields that otherwise would be abandoned. Also, in response to PCAST, the FY 1999 budget begins implementing an exploratory effort in methane hydrates to take advantage of technological advancements in detection and production made in the past decade. The budget also sustains an investment in university and National Laboratory research that strengthens the technological foundation for future oil and natural gas production advances.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Fossil Energy Research and Development					
Coal					
Advanced clean fuels research	15,831	15,844	14,928	-916	-5.8%
Advanced clean/efficient power systems	67,759	73,990	91,538	17,548	23.7%
Advanced research and technology development	17,352	17,579	23,579	6,000	34.1%
Total, Coal	100,942	107,413	130,045	22,632	21.1%
Petroleum — Oil technology	45,184	48,569	50,166	1,597	3.3%
Gas					
Natural gas research	68,457	71,000	67,357	-3,643	-5.1%
Fuel cells	48,804	40,210	42,200	1,990	4.9%
Total, Gas	117,261	111,210	109,557	-1,653	-1.5%
Program direction and management support					
Headquarters program direction	14,396	14,659	15,099	440	3.0%
ETC program direction	54,314	52,107	51,932	-175	-0.3%
Total, Program direction & management support . .	68,710	66,766	67,031	265	0.4%
Plant and capital equipment	2,000	2,532	2,600	68	2.7%
Fossil energy environmental restoration	13,054	12,935	11,000	-1,935	-15.0%
Cooperative research and development	5,432	5,840	5,836	-4	-0.1%
Fuels conversion, natural gas and electricity	2,188	2,173	2,173	—	—
Advanced metallurgical processes	5,000	4,965	5,000	35	0.7%
Subtotal, Fossil Energy Research & Development	359,771	362,403	383,408	21,005	5.8%
Use of prior year balances	-1,128	—	—	—	—
Total, Fossil Research and Development	358,643	362,403	383,408	21,005	5.8%
Full time equivalent employment (FTEs)					
	671	683	683	—	—

FY 1999 Budget Request

Coal

The FY 1999 request for the research and development of advanced coal-related technologies is \$130.0 million, a 21 percent increase from the FY 1998 appropriation of \$107.4 million. This increase will permit the Coal R&D Program to build on earlier research that has brought solutions to other environmental problems, such as acid rain control, and to begin applying these advances to improvements that can reduce, or one day eliminate, emissions of greenhouse gases and other air pollutants from coal.

The FY 1999 program, for example, will begin to couple progress made to date in advanced gasification and combustion systems, coal conversion, and environmental controls, with potentially revolutionary approaches to carbon sequestration, in a new concept called the “Vision 21 Energyplex.” Initially, the “**Vision 21 Energyplex**” represents a “roadmap” guiding coal and other advanced power and fuels R&D toward a common goal of maximizing efficiency and improving environmental performance. Ultimately, as new technologies evolve, “Vision 21” could become the basis for the “ultimate” fossil fuel-based energy facility, a

concept that would integrate high-technology “energy islands,” each producing power, fuels, and/or chemicals in the most efficient, flexible, and cleanest manner possible.

The FY 1999 program builds toward this long-range vision while, at the same time, focusing on more immediate benefits. For example, in FY 1999, the final phase of development for a new low-emission boiler system and the next major advance in pulverized coal combustion will be well underway. The FY 1999 program continues efforts to develop advanced technologies for controlling fine particulates from power plants in response to the Environmental Protection Agency’s revised Particulate Matter (PM) -2.5 ambient standards for airborne particles. It also addresses concerns over mercury and other air toxic emissions by continuing to examine ways to prevent these impurities from escaping into the atmosphere.

The FY 1999 program also sustains research efforts in producing affordable, clean fuels from coal. Much of this program is being redirected so that it complements ongoing gas-to-liquids research which relies on many of the same chemical processes.

Petroleum

The FY 1999 request for oil technology activities is \$50.2 million, a 3 percent increase from the FY 1998 level of \$48.6 million. Improved oil production technologies are needed to help reverse the decline in domestic oil production and the corresponding growth in oil imports. The majority of DOE’s oil technology program continues to focus on providing independent producers with advances that can keep oil flowing from U.S. reservoirs that would likely be abandoned with conventional technology. **In the FY 1999 budget, funding is increased for new technologies that can improve exploration, drilling, reservoir characterization, and extraction.** DOE is also proposing to revisit several high-priority reservoir classes where prior field tests have revealed production issues that can be overcome by better technology. Funding is also increased for activities that can lead to more effective environmental protection in oil and gas operations and the production of fuels that release fewer emissions affecting global climate change. Throughout each of these efforts, a strong technology transfer program is supported.

Gas

The FY 1999 request for gas-related R&D is \$109.6 million. Although this represents a two percent reduction from the FY 1998 level of \$111.2 million, the closer integration of the gas supply R&D program with the Department’s oil technology program now permits both activities to benefit from technological advances (in such common areas as reservoir diagnostics, drilling and fracture detection) achieved in either program. The supply portion of the gas budget, \$24.4 million, will continue to focus on advanced technologies that can locate and produce gas that otherwise would be bypassed or unmarketable. The FY 1999 program includes two new efforts: an examination of new diagnostic techniques to locate potentially vast quantities of methane hydrates; and engineering assessments to determine the best locations and approaches for revitalizing stripper wells in gas fields. The gas budget also continues to support two high-priority power generation technologies -- high-efficiency gas turbines and advanced fuel cells) -- that could enhance the future use of natural gas, as well as ultimately contribute to higher-efficiency coal-based power generation. In the advanced gas turbine program, DOE will complete full-scale component/subsystem testing and engine manufacturing, and begin preparations for full speed prototype testing of a new class of gas turbines with unprecedented efficiencies and environmental performance (\$43.0). The fuel cell program in FY 1999 will be stretched out by one to two years with R&D continuing to reduce costs and improve performance for market-ready systems early in the next decade (\$42.2).

Advanced Metallurgical Processes

DOE is requesting \$5.0 million for Advanced Metallurgical Processes, the program was transferred to DOE in 1996 upon the abolishment of the Bureau of Mines. In FY 1999, the program will initiate research in advanced materials that can contribute to the Office of Fossil Energy's "Vision 21 Energyplex" concept. In addition, research will continue on metallurgical techniques to extend the life of materials and/or find substitute materials and processing paths for materials that are environmentally hazardous.

Highlights of Program Changes (\$ in millions)

Advanced Clean Efficient Power Systems (FY 1998 \$74.0;
FY 1999 \$91.5)

+\$17.5

Increase funding for Integrated Gasification Combined Cycle to conduct innovative approaches for improving plant efficiencies for power and fuel production, thereby reducing greenhouse gas emissions in support of global climate change initiatives. Increase Advanced Research and Environmental Technology funding to investigate and improve CO₂ sequestration alternatives.

Advanced Research and Technology Development (FY 1998 \$17.6;
FY 1999 \$23.6)

+\$6.0

Increase funding provides for the redirection of research toward the Grand Challenges of the Virtual Demonstration Plant and CO₂ capture, sequestration and offset in support of the Vision 21 concept of a power and fuel complex.

Fossil Energy Environmental Restoration (FY 1998 \$12.9; FY 1999 \$11.0) **-\$1.9**

Decrease is due to final closeout and remediation of the National Institute for Petroleum and Energy Research at Bartlesville Oklahoma.

Naval Petroleum & Oil Shale Reserves

Mission

The Naval Petroleum and Oil Shale Reserve's mission is to manage, operate, protect, maintain and produce the oil and gas from the Reserves in order to achieve the greatest value and benefits to the United States with consideration of the interests of joint owners.

Program Overview

The Defense Authorization Act, Public Law 104-106, required the Department to contract to sell Naval Petroleum Reserve No. 1 (Elk Hills), located near Bakersfield, California, by February 10, 1998. Accordingly, DOE structured a competitive sale, and, on October 6, 1997, announced an agreement to sell the government's interest in Elk Hills to Occidental Petroleum for \$3.6 billion. Closing of the transaction is scheduled to occur by February 10, 1998.

Public Law 105-85 requires transfer of administrative jurisdiction of Naval Oil Shale Reserve No. 1 (NOSR-1) and the undeveloped portion of NOSR-3 to the Department of the Interior (DOI) for leasing during FY 1998. The properties are adjacent to one another and are located in Garfield County, Colorado. The developed portion of NOSR-3 is to be leased by the Department of the Interior by November 18, 1998 and DOE will turn over operation of its producing wells to the lessee(s). An interagency team has been established to accomplish the transfer of these properties in a timely and responsible fashion.

Production of Naval Petroleum Reserve No. 3 (Teapot Dome), located near Casper, Wyoming, will be maintained at maximum efficient rates. Under the Rocky Mountain Oilfield Testing Center (RMOTC) program, the Naval Petroleum and Oil Shale Reserves offers Teapot Dome to the oil industry for use as a working laboratory on a cost-sharing basis. The Naval Petroleum and Oil Shale Reserves program is exploring the possibility of transferring RMOTC to a consortium of private and educational institutions for continued operation. In the meantime, work at Teapot Dome will increasingly focus on environmental remediation in preparation for abandonment when the oil field reaches the end of its economic life.

Budget Overview

Funds are provided for program direction, the continued operation of the producing oil and gas properties, activities associated with closing-out governmental activities at Elk Hills, funding for 26 FTEs transferred from Elk Hills to other Departmental and Federal programs under a Federal Employee Transition Plan and activities associated with transferring the Colorado NOSR properties to DOI.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Naval Petroleum & Oil Shale Reserves	143,786	107,000	22,500	-84,500	-79.0%
Full time equivalent employment (FTEs)	70	64	62	-2	-3.1%

FY 1999 Budget Request

The FY 1999 Budget Request provides for costs associated with close-out of contracts and settlement of equity at NPR-1, well plugging and abandonment and environmental restoration necessary for the eventual abandonment of NPR-3, privatization of the Rocky Mountain Oilfield Testing Center (RMOTC) and funding for 62 FTEs, of which 26 may have been transferred from NPR-1 to other DOE or Government agencies under the terms of a Federal Employee Transition Plan.

NPR-1

The FY 1999 budget request for the Naval Petroleum and Oil Shale Reserves—California is \$3.6 million which provides for post-sale close-out activities at Elk Hills, including ongoing engineering work related to the finalization of equity with Chevron; completing environmental restoration and remediation activities; financial close-out of contracts; archiving and disposal of records; documentation and characterization of environmental status, disposition of third-party permits; and settlement of workers' compensation and disability claims.

NPR-3

The FY 1999 budget request for Naval Petroleum and Oil Shale Reserves—Colorado, Utah and Wyoming is \$10.2 million for retiring the gas plant and for environmental restoration efforts at NPR-3. NPR-3 is projected to operate economically through 2003, depending upon oil prices. The program is also increasing efforts to turn its Rocky Mountain Oilfield Testing Center program over to a consortium of private and educational proprietors by 2001.

NOSR-3

Additionally, \$1.9 million is provided for the Naval Oil Shale Reserves for continued surface management, groundwater monitoring, and operation and maintenance of producing gas wells on NOSR-3. The producing wells of NOSR-3 are to be leased to the private sector by the Department of the Interior by November 18, 1998. DOE will turn operation of its producing wells over to DOI's lessee(s) once a lease is in place. Revenues generated from leasing activities will be retained and may be used by the Naval Petroleum and Oil Shale Reserves for reimbursement of environmental restoration, waste management, and environmental compliance costs in addition to all previously unrecouped gas protection costs incurred by the United States, subject to specific Congressional authorization and appropriation for this purpose.

Program Direction

The budget provides \$6.8 million for program direction.

Revenues

Ongoing program operations at various Naval Petroleum and Oil Shale Reserve properties generate revenues from the sale of crude oil, natural gas, and associated hydrocarbons. Deposits to the Treasury Miscellaneous Receipts account are estimated to be \$7.0 million in FY 1999. FY 1997 actual deposits were \$516.0 million and the FY 1998 estimate is \$175.0 million. The decrease for FY 1999 estimated receipts results from the sale of Elk Hills and the required leasing of the Naval Oil Shale Reserves by the Department of the Interior.

Highlights of Program Changes (\$ in millions)

Naval Petroleum Reserve		-\$84.5
❖	Decrease in operations and maintenance due to sale of NPR-1.(-\$85.9)	
❖	Increase due to environmental restoration and plugging/abandonment of wells at NPR-3. (+\$1.7)	

- ❖ Increase due to activity required for transfer of NOSRs to DOI. (+\$0.7)
- ❖ Decrease due to reduction in program requirements and FTE's. (-\$1.0)

Elk Hills School Lands Fund

Mission

The Defense Authorization Act, Public Law 104-106, provides for the settlement of longstanding claims to certain Elk Hills lands by the State of California. Under the terms of the settlement, a contingency fund has been established in the Treasury for payment of nine percent of the net sales proceeds generated from the divestment of Elk Hills over a seven-year period.

Budget Overview

Provided funds are appropriated annually, the Department will pay the State of California \$36.0 million each year for five years beginning in FY 1999. Any remaining balance due after the five years shall be paid in two equal installments in years six and seven unless the seventh payment is deferred due to delay in the equity finalization process. Due to the payment schedule, the net present value of the settlement equates to approximately 7 percent of the estimated net proceeds of sale. Accordingly, the FY 1999 budget requests \$36.0 million for the first payment to the State of California.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1998 vs. FY 1999
Elk Hills School Lands Fund	—	—	36,000	+36,000

Energy Conservation

Mission

The mission of the Office of Energy Efficiency and Renewable Energy is to work with its customers to lead the nation to a stronger economy, a cleaner environment, and a more secure future by developing and deploying efficient and renewable energy technologies that meet the needs of the public and the marketplace.

Program Overview

In its 1997 review of the national energy R&D portfolio, the President's Committee of Advisors on Science and Technology recommended expansion of a number of national energy R&D programs, and targeted energy efficiency programs for the greatest increases in funding. The Committee noted that energy efficiency technologies produce near-term and rapidly expanding public benefits, including air emissions reductions, reduced dependence on oil, and lower costs to households and firms. According to the Committee's analysis, R&D investments in energy efficiency have contributed to efficiency improvements that save U.S. consumers approximately \$170 billion per year. The Committee called for significant expansion of energy efficiency programs in order to meet the energy challenges and opportunities of the 21st century.

The programs of the Office of Energy Efficiency and Renewable Energy (EERE) funded by the Interior and Related Agencies Appropriations Subcommittee are designed to improve the fuel economy of automobiles and other vehicles, increase the productivity of the nation's most energy-intensive and polluting industries, and improve the energy efficiency of buildings and appliances. EERE's programs work in voluntary cost-shared partnerships with the nation's utilities, industries, states, and the public to advance the development and deployment of clean and efficient energy technologies. By developing the means to more cost-effectively manage energy use, EERE provides tools for the nation, its industries, and its citizens to be smart about energy—to use energy more efficiently, with fewer financial and environmental costs. By developing and accelerating the use of energy efficiency technologies, EERE's programs help to strengthen the economy, improve the environment, and ensure a more secure future.

Transportation

The U.S. transportation sector accounts for two-thirds of the nation's annual oil consumption and depends on oil for 97 percent of its fuel. The Office of Transportation Technologies (OTT) funds research, development and deployment of technologies that can significantly alter current trends in energy demand, particularly for oil. Commercialization of innovative transportation technologies and alternative fuels is the nation's best strategy for reducing reliance on oil. These advanced technologies can also result in dramatic reductions in criteria pollutants and greenhouse gas emissions from the transportation sector. The development and market acceptance of advanced transportation technologies (advanced clean diesel engines, hybrid vehicles, electric vehicles, fuel cell vehicles) and alternative fuels (ethanol from biomass, natural gas, electricity and others) have the potential to reduce oil consumption by 1 million barrels per day in 2010 and 2 million barrels per day in 2020; and reduce greenhouse

gas emissions by 25 to 30 million metric tons in 2010 and by over 50 million metric tons in 2020.

The Office of Transportation Technologies is a leader in the Partnership for a New Generation of Vehicles (PNGV) which focuses on significantly improving the energy efficiency of automobiles and reducing associated emissions. Research and development activities in support of PNGV emphasize four key system areas: hybrid-electric vehicle drive, direct-injection engines, fuel cells, and lightweight materials. In particular, OTT is working to advance the PNGV goal of developing by 2004 prototype mid-sized cars, capable of 80 miles per gallon and two-third reductions in nitrogen oxides (NO_x) and carbon dioxide (CO₂) emissions, without compromising safety, comfort, performance, and affordability. The auto industry provides a significant share of the funding for PNGV research. Announcements in 1997-1998 by the auto industry suggest that the PNGV goal is within reach and the government-industry partnership is working as envisioned.

Trucks account for the vast majority of the recent increase in highway fuel consumption, due to increased demand and their relatively low fuel economy. Trucks now consume as much fuel as automobiles with the nation's heavy reliance on trucks to haul freight and the explosive popularity of light duty trucks, such as sport utility vehicles. The goal of the Heavy Vehicle R&D program is to develop by 2004 the enabling technologies needed to achieve ultra-low emissions and 10 mpg fuel economy in heavy truck classes, which currently average 5.3 mpg as a fleet.

Industry

Industry consumes over a third of the energy delivered in the United States and spends tens of billions of dollars annually for pollution abatement and control. Seven industries account for 82 percent of the energy used in manufacturing: pulp and paper; steel; aluminum; metal-casting; chemicals; petroleum refining; and stone, clay and glass. These industries also account for over 80 percent of air emissions and over 90 percent of waste produced by U.S. manufacturing. The Office of Industrial Technologies focuses on developing innovative technologies to assist the nation's most energy-intensive industries in becoming more resource efficient, and thereby more productive and competitive and less polluting.

These industries could save over \$10 billion in industry energy costs by 2010, and reduce carbon dioxide emissions by millions of tons per year. In collaboration with different industries, including the metal-casting, glass, aluminum, forest products, steel, and chemical industries, OIT is developing improved technologies that reduce energy needs, costs, and associated environmental impacts. For example, OIT is conducting research to reduce nitrogen oxide and other emissions from combustion processes in steel production, and to improve recycling of iron units from current production processes. OIT is also developing an advanced production cell that will result in a more efficient and cost-effective aluminum manufacturing process. OIT's industry-specific R&D strategies are balanced with crosscutting technology development programs such as advanced turbines, materials and combustion research, and technology access programs including the Industrial Assessment Centers and the Inventions and Innovation programs.

Buildings

America's homes and offices consume roughly \$220 billion worth of energy each year. Heating and cooling, lighting, appliances, and equipment in buildings together account for over one-third of U.S. carbon emissions. The Office of Building Technology, State and Community Programs (BTS) is working with its partners in the private sector and in state and local governments to make the nation's building stock more energy-efficient, comfortable, and

affordable. The Buildings Technology program consists of 1) Building Systems Design which improves building performance and accelerates the deployment of new technologies and practices; 2) Building Equipment and Materials which develops and deploys improved equipment, appliances, components and materials; 3) Codes and Standards which develops codes for buildings and energy efficiency standards for appliances and equipment; and 4) the State and Local Partnership Program which works with state and local agencies to increase the energy efficiency of homes occupied by low-income citizens: particularly the elderly, persons with disabilities, and families with children. The State and Local Partnership Programs also provide grants to states and localities to undertake projects that will increase energy efficiency, reduce greenhouse gas emissions and use renewable energy resources in a manner which offers the greatest returns.

Federal Energy Management Program

As the nation's largest single energy user, the federal government spends roughly \$8 billion each year on energy required for use in its facilities and operations. The Federal Energy Management Program (FEMP) achieves significant federal cost savings and associated environmental benefits by assisting federal agencies in identifying, financing, and implementing energy efficiency and renewable projects in federal facilities. In fact, FEMP exceeded its interim goal of reducing energy consumption in federal buildings per square foot by 10 percent between 1985 and 1995.

By the end of FY 1998, FEMP will have initiated six regional Energy Savings Performance Contracts (ESPCs) and additional technology-specific ESPCs to assist federal agencies across the country in purchasing energy efficiency and renewable energy services. These streamlined regional contracts use private capital to provide energy efficiency services to federal facilities across all six regions, and allow federal agencies to pay for these services through energy cost savings. These regional ESPCs and technology-specific ESPCs are projected to cut federal energy costs by over 11 billion dollars over the life of the projects. A portion of these savings will be used to pay contractors for their initial private investment in building retrofits.

Budget Overview

The FY 1999 Congressional Budget Request for Energy Conservation is \$808.5 million, 32% above the FY 1998 enacted level. The total FY 1999 budget for the Energy Efficiency and Renewable Energy program, including both the Energy Conservation and Solar and Renewable energy activities totals \$1,197.8 million (gross), nearly 32% above the FY 1998 enacted level. All of EERE's R&D activities are key components of the **President's Climate Change Technology Initiative**. Increases in FY 1999 reflect the firm support of the Administration for Energy Efficiency and Renewable Energy programs as a cost-effective solution to reducing greenhouse gas and other emissions, improving U.S. energy security, and advancing the nation's economic competitiveness.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Energy Conservation					
Energy Conservation R&D					
Transportation sector	172,457	193,271	246,096	52,825	27.3%
Industry sector	115,424	136,197	166,559	30,362	22.3%
Federal energy management program	19,800	19,800	33,868	14,068	71.1%
Building technology, state and community sector — non-grants	80,054	78,780	126,445	47,665	60.5%
Policy and management	26,403	28,580	44,432	15,852	55.5%
Total, Energy conservation R&D	414,138	456,628	617,400	160,772	35.2%
Building technology, state, and community sector — grants	149,845	155,095	191,100	36,005	23.2%
Subtotal, Energy Conservation	563,983	611,723	808,500	196,777	32.2%
Use of nonappropriated escrow funds (PODRA) in SLAP	-29,997	-20,611	-35,000	-14,389	-69.8%
Use of prior year balances	-480	—	—	—	—
Total, Energy Conservation	533,506	591,112	773,500	182,388	30.9%
Full time equivalent employment (FTEs)	432	430	427	-3	-0.7%

FY 1999 Budget Request

The FY 1999 Budget Request supports EERE's work on research, development, and deployment activities that lead to energy savings, enhanced industrial productivity and competitiveness, environmental benefits, and carbon emissions reductions. The following discussion outlines EERE's approach in FY 1999 to some of its major activities. Detailed information on budget changes for each of EERE's programs is provided in the subsequent section.

- ❖ **Partnership for a New Generation of Vehicles** (FY 1998 \$116.7M; FY 1999 \$152.7M) provides technical leadership for the multi-agency and industry initiative. DOE will focus R&D on the Partnership for a New Generation of Vehicles' (PNGV) goal of developing an 80 mile-per-gallon family car with no compromises in size, safety or performance with a production prototype by 2004. In FY 1999, success will be measured by progress toward performance goals in several key component technologies—fuel cells, small diesel engines, batteries, and power controllers.
- ❖ **Clean Cities** program efforts (FY 1998 \$2.9M; FY 1999 \$6.0M) advanced vehicle deployment and infrastructure development in over 60 participating communities. Several of these local programs are linking across regional and state boundaries to strengthen efforts, expand purchasing power, and establish refueling infrastructure along Clean Corridors to enable inter-city travel of alternative fuel vehicles.
- ❖ **Heavy Vehicle System R&D** (FY 1998 \$12.9M; FY 1999 \$33.2M) is directed to raise heavy truck fuel efficiency to 10 mpg by 2004 from 7 mpg currently, while also obtaining ultra-low emissions and alternative fuel flexibility. Efforts include a recently initiated program to double the fuel efficiency of light-duty trucks,

including the popular sport utility vehicles by incorporating advanced diesel engine technologies.

- ❖ **“Industries of the Future”** public-private partnership efforts (FY 1998 \$53.1M; FY 1999 \$76.0M) include a new Industry-Wide Competitive Solicitation initiative that will focus on developing a variety of new technologies that cut energy use, emissions, and waste in multiple industries and provide extremely cost-effective opportunities to reduce greenhouse gas emissions in industry. OIT is concluding its current work with the petroleum refining industry due to the lack of progress in developing a vision and technology road map to direct future work.
- ❖ **Advanced Turbine Systems** (FY 1998 \$34.7M; FY 1999 \$33.0M) development efforts will remain on schedule for commercialization of the technology in the year 2001 with a 15 percent improvement in efficiency and a 80 percent reduction in emissions. Efforts support an efficient and restructured electric utility market with options for decentralized co-generation of electricity in combination with heat and power production.
- ❖ **Building America** (FY 1998 \$4.7M; FY 1999 \$8.8M) and **Rebuild America**, (FY 1998 \$7.0M; FY 1999 \$10.6M) are the key components of the Buildings for the 21st Century strategy—which focuses on “whole-buildings” and the integration of R&D on building components and systems with deployment activities. The increase for Building America will support five new 200-home communities. Increased funding for Rebuild America will support 85 new partnerships resulting in action plans to renovate over 400 million square feet, reducing annual energy costs by \$143 million.
- ❖ **Buildings Equipment and Materials** (FY 1998 \$26.9M; FY 1999 \$46.2M) includes \$8.0 million for technology road maps and competitive R&D to fund new cost-shared R&D projects that offer the greatest energy savings and environmental benefits in key technologies.
- ❖ **State and Local Partnership programs** (FY 1998 \$156.7M; FY 1999 \$197.7M) include: The **Weatherization Assistance Program** (FY 1998 \$124.8M; FY 1999 \$154.1M) which will support the weatherization of 14,900 additional low-income homes, while the **State Energy Program** (FY 1998 \$30.3M; FY 1999 \$37.0M) grants will promote innovative state energy efficiency and renewable energy activities. Finally, a new initiative (\$5.0M in FY 1999) for Competitive Energy Partnerships with states, business improvement districts, homebuilders, retailers, public institutions, and non-profits will establish more energy efficient and comfortable buildings. Municipal Energy Management Program efforts for urban, applied-R&D studies are level funded at \$1.6 million.
- ❖ **The Federal Energy Management Program** (FY 1998 \$19.8M; FY 1999 \$33.9M) will continue to emphasize Energy Savings Performance Contracts (ESPCs) which utilize private sector funding to finance energy conservation project through the resulting energy savings. Efforts will also target placing 20,000 solar roofs on Federal Facilities by 2010 as part of the President’s Million Solar Roofs Initiative.

Highlights of
Program Changes
(\$ in millions)

Transportation Sector (FY 1998 \$193.3; FY 1999 \$246.1)

+\$52.8

- ❖ Partnership for a New Generation of Vehicles (**PNGV**) efforts (FY 1998 \$116.7; FY 1999 \$152.7) drive the majority of the increase reflecting stepped up efforts to

achieve the program goal to develop an 80-mpg family car with a production prototype by 2004 with FY 1999 efforts focusing on components such as fuel cells, advanced small diesel engines, batteries, and power controllers. +\$36.0

- ❖ Electric Vehicle R&D (FY 1998 \$18.4; FY 1999 \$11.0) efforts with the U.S. Advanced Battery Consortium decrease as mid-term battery technologies are completed and efforts are concentrated on long-term battery technologies. -\$7.4
- ❖ Heavy Vehicle Alternative Fuels R&D (FY 1998 \$12.7; FY 1999 \$11.0) and Materials Technology (FY 1998 \$8.1; FY 1999 \$7.3) decrease as particular projects are completed and follow up efforts are temporarily postponed in lieu of higher priorities in other programs -\$2.5
- ❖ Heavy Vehicle Systems R&D (FY 1998 \$12.9; FY 1999 \$33.2) support advanced truck-sized diesel engines with higher efficiency and lower emissions and application to both heavy and light-duty trucks, such as sport utility vehicles, +\$20.3
- ❖ Technology Deployment (FY 1998 \$11.8; FY 1999 \$16.3) support voluntary Clean Cities programs. These increases support deployment of alternative fueled vehicles and very efficient vehicles, infrastructure development, advanced vehicle deployment, safety-related issues, and program evaluation. +\$4.5

Industry Sector (FY 1998 \$136.2; FY 1999 \$166.6) +\$30.4

- ❖ “**Industry of the Future**” public-private R&D partnerships with specific energy and waste intensive industries (FY 1998 \$53.1; FY 1999 \$57.0) either remain level or increase slightly, with the exception of the Petroleum Refining Vision, for which funding is no longer being requested due to lack of industry’s progress toward a Vision and Technology Roadmap to direct future work. +\$3.9
- ❖ Initiate an industry-wide competitive solicitation (FY 1998 \$0; FY 1999 \$19.0) funding research on various new technologies with a focus on developing technologies that substantially reduce greenhouse gas emissions. +\$19.0
- ❖ The **Advanced Turbine Systems** (ATS) program (FY 1998 \$34.7; FY 1999 \$33.0) and Advanced Materials R&D efforts essentially remain level and provide for deployment of ATS in 2001. -\$1.7
- ❖ Technology Access (FY 1998 \$26.3; FY 1999 \$32.0) activities include increases for Motor Challenge, +\$4.8, and **NICE3** (National Industrial Competitiveness through Energy, Environment and Economics) partnerships, +\$1.5. +\$5.7

Building Technology, State and Community Sector (FY 1998 \$233.9; FY 1999 \$317.5) +\$83.6

- ❖ Building Systems Design (FY 1998 \$23.0; FY 1999 \$36.4) increases support of the Buildings for the **21st Century** strategy and the development of design tools. +\$13.4
- ❖ Building Equipment and Materials R&D (FY 1998 \$26.9; FY 1999 \$46.2) increases with a new focus on technology road maps and competitive, peer reviewed R&D. +\$19.3
- ❖ Codes and Standards (FY 1998 \$14.4; FY 1999 \$22.6) increases accelerate the establishment of consensus-based standards and facilitate implementation of state codes. +\$8.2

- ❖ Competitive Energy Partnerships (FY 1998 \$0.0; FY 1999 \$5.0) will be initiated to accelerate the use of advanced technologies at the local level. +\$5.0
- ❖ State grant funding for the Weatherization Assistance Program (FY 1998 \$124.8; FY 1999 \$154.1) support the weatherization of 14,900 additional low-income homes, and the State Energy Program (FY 1998 \$30.3; FY 1999 \$37.0) grants promote innovative state energy efficiency and renewable energy activities, increase +\$29.3 and +\$6.7, respectively. +\$36.0

Federal Energy Management Program (FEMP) (FY 1998 \$19.8; FY 1999 \$33.9) +\$14.1

FEMP increases promote the application of energy efficiency measures to buildings and operations to increase efficiency and reduce government energy consumption by 30 percent by 2005 including:

- ❖ Project Financing (FY 1998 \$7.9; FY 1999 \$13.9) assistance such as utilizing authorized alternative, non-federal financing for energy projects at federal facilities. +\$6.0
- ❖ Direct Technical Guidance and Assistance (FY 1998 \$6.3; FY 1999 \$10.7) such as project design assistance, development and proliferation of software and other design tools, and training. +\$4.4
- ❖ Interagency coordination efforts, policy development, outreach, and the Regional Energy Action Teams increase, (FY 1998 \$3.8; FY 1999 \$6.4). +\$2.6

Policy and Management (FY 1998 \$28.6; FY 1999 \$44.4) +\$15.8

- ❖ Headquarters (FY 1998 \$7.5; FY 1999 \$13.7) activities increase is driven by a +\$5.0 million increase reflecting a change in methodology to centrally fund Departmental and crosscutting initiatives which had been previously been supported by funding from benefiting sector programs. Other activities including HQ salaries, contractual and support services, and Working Capital Fund increase +\$1.2. +\$6.2
- ❖ The six Regional Support Offices (FY 1998 \$12.4; FY 1999 \$15.0) increases support implementation of programmatic initiatives. +\$2.6
- ❖ The Centers of Excellence for Sustainable Development, and for Natural Disaster Relief (FY 1998 \$0.0; FY 1999 \$2.0) support technical assistance and technical access targeting communities in transition, such as empowerment zones, or responding to natural disasters. +\$2.0
- ❖ A strategic Policy Initiative (FY 1998 \$0.0; FY 1999 \$2.5) will support technical and economic studies and scientific evaluations in conjunction with the DOE Office of Policy towards the development of a comprehensive, “corporate” policy on climate change related issues including emission trading credits and incentive, including tax incentives, and taking into account the variables associated with a restructure electric industry. +\$2.5

Economic Regulation

Mission

Offices financed in the Economic Regulatory Administration appropriation are undergoing changes in their mission resulting in significant reductions in their activity related to Petroleum Overcharge and related legislation. The Compliance activity organized within the Office of General Counsel has declined to a level which requires no new appropriations. Prior year balances are adequate to finance shutdown activity. The follow-on regulatory activities administered in the Office of Hearings and Appeals lag the Compliance activity. As a result, appropriations will continue to be necessary in FY 1999.

Program Overview

Office of General Counsel (Compliance)

This program administers the enforcement activities resulting from a wide spectrum of oil pricing and allocation regulations that governed the petroleum industry throughout most of the 1970s. The program currently consists of litigating and negotiating settlements of those cases previously developed, of which approximately ten still remain unresolved.

Hearings and Appeals

The Office of Hearings and Appeals (OHA) is responsible for all of the Department's adjudicatory processes other than those administered by the Federal Energy Regulatory Commission. OHA's enforcement work is nearly concluded. However, OHA continues to conduct refund proceedings that return petroleum overcharge funds that are collected by the Department to parties who were injured by those overcharges, and to the states and federal government for indirect restitution.

Over the years, OHA has gained jurisdiction over a wide variety of other matters including: Freedom of Information Act and Privacy Act Appeals; evidentiary hearings to determine an employee's eligibility for a security clearance; and requests for exception from DOE regulations and orders, such as reporting requirements to the Energy Information Administration. Funding for this activity is being sought in Energy and Water Development appropriations.

Budget Overview

Office of Hearings and Appeals

The budget request of \$1.8 million is for processing applications for refund and for related activities arising from the regulatory program initiated under the Emergency Petroleum Allocation Act of 1973. Excess monies from refund processing are transferred to the Treasury Department for deficit reduction.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Economic Regulation					
Office of Hearings and Appeals	2,725	2,725	1,801	-924	-33.9%
<i>Full time equivalent employment (FTEs)</i>	69	25	17	-8	-32.0%

FY 1999 Budget Request

Office of Hearings and Appeals is seeking \$1.8 million of new authority to conduct its regulatory program. Most expenses are related to its professional staff with personnel compensation and benefits expenses equal to \$1.3 million, and support services equal to \$0.5 million. Support services are primarily provided within the Department's Working Capital Fund, and include rent, supplies, printing and communication and information technology. In FY 1999, the Office of Hearings and Appeals expects to resolve 1,300 refund cases and refund about \$8.0 million in direct restitution to these applicants. OHA may also commence final distributions of its crude oil refund provided that DOE concludes all enforcement proceedings so that the amount available for distribution is known.

Highlights of Program Changes (\$ in millions)

Office of Hearings and Appeals (FY 1998 \$2.7; FY 1999 \$1.8) - \$0.9

Decrease is due to a the ramp down in the number of cases being processed.

Strategic Petroleum Reserve

Mission

The mission of the Strategic Petroleum Reserve (SPR) is to reduce U.S. vulnerability to economic, National security, and foreign policy consequences of petroleum supply interruptions. The SPR discourages supply disruptions as a tool of other nations by being prepared to respond rapidly to such threat in concert with the International Energy Agency alliance of 23 industrial nations by adding to crude oil supplies in the United States at the direction of the President.

Program Overview

The program requires that each SPR site and terminal be capable of transitioning within 15 days from operational readiness to an initial drawdown rate of 4.4 MMB/day and a sustainable rate of 4.2 MMB/day by the year 2000. The program is currently at 3.7 MMB/day. The SPR maintains a continual readiness posture through its operational programs, initiatives and tests. The SPR facilities and systems have been designed and constructed to achieve high levels of both reliability and availability. In 1994, the SPR implemented a Life Extension Program scheduled for completion in 2000 to maintain high standards of system reliability and availability and extend the life of the Reserve through the year 2025. The Life Extension Program is accomplishing this by streamlining site configurations and standardizing equipment across the Reserve to reverse obsolescence, improving long term reliability, and reduce maintenance and operating costs. At the Weeks Island site, being decommissioned because of concerns about long term mine integrity, SPR completed oil relocation activities and has commenced brine fill for long term stability and is conducting oil skimming activities. Brine production/fill and oil skimming operations are planned for completion in FY 1998 and decommissioning is planned for 1999 with a follow-on monitoring to assure geotechnical stability, mine integrity, and emergency response capability. Following the decommissioning, the program will maintain a 680 million barrel capacity at the four remaining sites. The current inventory level of 563.4 million barrels of crude oil provides the equivalent of 61 days of net import protection, a reduction from the 68 days of net import protection provided by 574 million barrels in FY 1996. At the end of calendar year 1997, the SPR completed remedial activities to remove excess gas from approximately 170 million barrels of oil and sold 10.2 million barrels of Reserve to finance the cost of FY 1997 operations. Approximately 16 million barrels of oil will be sold in FY 1998 to finance FY 1998 operations. By FY 1999, the Reserve inventory of 547.4 million barrels will provide the equivalent of 58 days of net petroleum import protection.

Budget Overview

The FY 1999 budget request of \$160.1 million provides for storage site maintenance, security, Drawdown testing, and Drawdown readiness; maintains monitoring to measure possible intrusion of gas into the oil inventory; continues the long term replacement of critical physical systems to assure the capability of the SPR to effectively perform its mission through the year 2025; and completes the decommissioning of the Weeks Island storage facility in June 1999. No oil acquisition planned in FY 1999; only payment of fixed terminaling costs which maintains capability for crude oil fill operations.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Strategic Petroleum Reserve					
SPR — Facilities development	209,000	207,500	160,120	-47,380	-22.8%
SPR Petroleum Account	—	-207,500	—	207,500	100.0%
Proceeds from sale of Weeks Island Oil, SPR decommissioning	-219,918	—	—	—	—
Total, Strategic Petroleum Reserve	-10,918	—	160,120	160,120	—
Full time equivalent employment (FTEs)	141	137	135	-2	-1.5%

FY 1999 Budget Request

The FY 1999 budget request for the SPR is \$160.1 million, which is \$47.4 million lower than the FY 1998 appropriation of \$207.5 million. This reduction of 23 percent reflects the program's successes in completing gas-in-oil remediation, decommissioning Weeks Island ahead of schedule, completing the installation of heat exchangers to reduce oil temperature at delivery to terminals, and creating operational savings by reversing facility obsolescence through Life Extension Program investments, systems re-engineering, and integration of information systems technology.

The FY 1999 budget maintains operational readiness and facilities maintenance activities consistent with Level I performance criteria; continues the Drawdown Readiness Program and performs annual exercises; the environmental safety and health (ES&H) program; and the management of the SPR program. Major objectives for FY 1999: complete Weeks Island decommissioning plan by June 1999; initiate long term monitoring of Weeks Island to assure mine stability; continue the monitoring program for gas intrusion/regain; continue the Life Extension Program; and pursue process re-engineering initiatives for continuous improvement of system reliability and operational cost efficiency.

At the end of FY 1997, a balance of approximately \$33.0 million remains in the SPR Petroleum Account to provide partial financing required for the incremental cost to initiate and sustain a full SPR Drawdown pending receipt of oil sale revenues. This balance represents approximately 75 percent of the total cost of a six month Drawdown and is therefore critical to SPR drawdown readiness. Since FY 1993, \$420.4 million has been transferred from the SPR Petroleum Account to finance SPR operations and for other purposes in addition to approximately \$750 million raised by non emergency oil sales to finance FY 1996, FY 1997 and FY 1998 SPR and other Federal operations.

For FY 1999, the SPR requests new Budget Authority.

Highlights of Program Changes (\$ in millions)

Strategic Petroleum Reserve -\$47.4

- ❖ Reduction in level of activities for **Weeks Island** mitigation and decommissioning. (-\$5.3)
- ❖ Decrease in year-to-year level of the Life Extension Program (**LEP**) activities to extend the life of systems such as pipelines, valves and pumping equipment. Completion of the LEP by the year 2000 will assure the capability of the SPR to effectively perform its mission thru the year 2025. (-\$28.2)

- ❖ Reduction reflects prior year implementation of information system upgrades and the Management and Operating (M&O) Voluntary Separation Program. (-\$7.9)
- ❖ Reduction reflects operational savings achieved by re-engineering systems and implementing Life Extension. (-\$4.9)
- ❖ Reduction reflects management savings achieved by Federal staff streamlining. (-\$1.0)

Energy Information Administration

Mission

To be the nation's primary source of comprehensive energy information, providing high quality energy data, analysis and forecasts to customers in government, industry and the public in a manner that promotes sound policy making, efficient markets and public understanding.

Program Overview

As an independent statistical/analytical agency, the Energy Information Administration (EIA) has two primary roles. The first role is to conduct functions required by statute. This consists of the development and maintenance of a comprehensive energy database and publication of reports and analysis for a wide variety of customers and specific reports which are required by law. Second, EIA satisfies inquiries for energy information, from policy makers primarily in the Department and the Congress and from other government entities, the energy industry and the general public. To fulfill these roles, EIA collects, analyzes, and disseminates information on energy reserves, production, consumption, distribution, prices, technology and related international, economic and financial markets.

Budget Overview

The FY 1999 budget request is \$70.5 million which will fund EIA data and analysis activities supporting energy issues related to energy use. Included are the following programs: efficiency and renewable data collection and analysis; end-use energy consumption surveys; greenhouse gas data collection studies; mid-term energy demand modeling; and integrated end-use energy data compilation. The FY 1999 budget will also continue to support analysis and data collection in response to electric industry restructuring.

To support the **Climate Change Technology Initiative**, EIA will collect data and conduct cross-cutting analysis of carbon management policies and related data to enable the Department, the Administration and Congress to examine policies that maximize environmental benefits while minimizing economic costs.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Energy Information Administration					
National energy information system	66,120	66,800	70,500	3,700	5.5%
Full time equivalent employment (FTEs)	409	374	353	-21	-5.6%

FY 1999 Budget Request

EIA's budget has been restructured to present a more accurate view of the total costs of each program. Most of the program direction funds have been distributed from this activity to the programs they support. Other changes include the reorganization of the ADP services program into the information technology program which now contains all of the computer support operations for the agency. A total of \$2.5 million is included to support the Presidential Initiative on Climate Change Technology.

In FY 1999, EIA will produce approximately 240 reports and analyses covering a wide variety of energy issues. EIA will respond to about 300,000 inquiries and requests for energy information. The FY 1999 program will continue to support statistical activities such as the analysis and data collection in response to electric industry restructuring. EIA will continue to maintain the present high levels of customers who are satisfied with the availability, relevance, accuracy and comprehensiveness of EIA's information by continuing its customer feedback analysis program to corporately review feedback and develop ways to improve the products and services delivered. During FY 1999, EIA will continue expansion of its customer base and the avenues through which it communicates by increasing the number of daily users of its Internet site by 25 percent and increasing the citations of EIA information in the media by 10 percent. In the area of timeliness of information, EIA will continue its efforts to increase the share of customers who are very satisfied with timeliness of data to 50 percent by 2002.

Oil and Gas (\$17.9 million) 86 FTEs

EIA will continue to collect and publish weekly, monthly and annual statistics on the supply of crude oil and refined petroleum products and data on crude oil and petroleum sales and prices. The program will produce annual data series on reserves and production of crude oil and natural gas.

Coal, Nuclear, Electric and Alternative Fuels (\$9.4 million) 59 FTEs

EIA will collect and publish coal, electric, nuclear and renewable energy information, statistics and short-term forecasts. In addition, surveys will be updated to incorporate data on electric industry restructuring.

Energy Markets and End Use (\$9.4 million) 56 FTEs

The budget supports the preparation of monthly and annual integrated energy statistical publications. EIA will collect and publish information on international energy markets; produce baseline short-term energy forecasts and conduct residential, commercial, and manufacturing energy consumption surveys. To support the Climate Change Technology Initiative, EIA will collect more detailed data on fuel consumption.

Integrated Analysis and Forecasting (\$9.6 million) 55 FTEs

This program will maintain the National Energy Modeling System used for mid-term energy supply and demand projections and policy analysis, collect data, and conduct analyses of greenhouse gas emissions. To support the Climate Change Technology Initiative, EIA will provide technical assistance to federal agencies and other entities who will be seeking to measure their greenhouse gas emissions and document reductions under the President's plan, assess the effectiveness of the deployment of current and future technologies in mitigating carbon emissions, and expand international energy analysis and long-term modeling of carbon emissions.

Information Technology (\$9.4 million) 39 FTEs

These funds will be used to operate EIA's ADP facility which includes all ADP operations, generalized software, user service and management support functions.

National Energy Information Center (\$2.2 million) 17 FTEs

Operation of the National Energy Information Center to respond to public inquiries and provide publication support and continue dissemination activities for EIA products will continue.

Statistics and Methods (\$2.3 million) 19 FTEs

This program will develop and maintain statistical integrity and evaluate the quality and meaningfulness of EIA's information.

Resource Management (\$10.2 million) 22 FTEs

Provide overall management and administrative support to EIA, including program planning, financial, contracts, and human resource management, administrative support and logistic support services. Also included are EIA's share of costs to the Working Capital Fund.

**Highlights of
Program Changes
(\$ in millions)**

Oil and Gas (FY 1998 \$17.3; FY 1999 \$17.9) +\$0.6

Increase in support for activities previously performed by federal staff.

Energy Markets and End Use (FY 1998 \$8.9; FY 1999 \$9.4) +\$0.6

Increase of \$0.4 million for data collection and analysis of carbon emissions and an increase of \$0.2 million for increases for statistical services support for activities previously performed by federal staff.

Integrated Analysis and Forecasting (FY 1998 \$7.5; FY 1999 \$9.6) +\$2.1

Increase for technical assistance to other Federal agencies in estimating carbon emissions, EIA assessment of advanced technologies to mitigate emissions, and expansion of international energy analysis and long-term modeling of carbon emissions.

Clean Coal Technology

Mission

The Clean Coal Technology Program is a technology development effort jointly funded by government and industry to demonstrate the most promising advanced coal-based technologies for using coal cleanly, efficiently (reducing CO₂ emissions) and cheaply to meet our domestic energy needs and to generate the data needed for the marketplace to judge their commercial potential, with the most promising technologies being moved into the domestic and international marketplace. Underlying this objective is the recognition that the vast, and relatively inexpensive U.S. coal reserves represent a critical energy resource which can provide a significant economic advantage to the nation. However, these benefits can only be realized when coal can be used in ways which are environmentally responsible and when advanced technology can achieve significantly higher efficiencies than existing commercial power plants.

Program Overview

The program began in 1985 with the objective of accelerating the pace at which advanced coal-based utilization technologies would enter commercial service. The program is of limited duration entailing five rounds of competition. Industry, by law must fund at least 50 percent of each project. Today, the five rounds have been awarded and the average industry cost share is 66 percent of the program's \$5.7 billion in funding. Most of the projects from the early rounds have been completed and several are being used to meet Clean Air Act requirements. The more complex power generating systems are moving into construction and operation. These technologies will be ready for repowering or greenfield applications in the 2000-2010 time-frame. The technologies being demonstrated in the program are grouped into four primary market applications: Advanced Electric Power Generation Systems, which offer the prospect of much higher efficiency coal-based power plants to meet the energy demand requirement of the nation well into the next century; Environmental Control Devices, which offer more attractive ways to reduce emissions for existing powerplants and industrial facilities both domestically and in international markets; Coal Processing for Clean Fuels, which offers coal feedstock conversion to produce a stable fuel of high energy density that can be used to produce steam electricity, or that can be used as a transportation fuel; and Industrial Applications, which offer superior ways to competitively manufacture key commodities such as steel in an environmentally responsive manner.

Budget Overview

The Clean Coal Technology program operates in FY 1999 with previously appropriated funding. The Administration's policy calls for limiting the program to existing projects currently under contract. Thus, if there are reduced programmatic requirements, funds can be rescinded.

	FY 1997 Appropriation	FY 1998 Appropriation	FY 1999 Request	FY 1999 vs. FY 1998	
Clean Coal Technology					
Advance appropriation - round 4	15,000	—	—	—	—
Advance appropriation - round 5	255,879	—	—	—	—
Advance appropriation	-150,000	—	—	—	—
Appropriation	-123,000	-101,000	-40,000	61,000	60.4%
Total, Clean Coal Technology	-2,121	-101,000	-40,000	61,000	60.4%
Full time equivalent employment (FTEs)	70	68	67	-1	-1.5%

FY 1999 Budget Request

The FY 1999 budget proposes that \$40.0 million be deferred until FY 2000 and beyond. The proposed deferral of funds reflects schedule delays, primarily resulting from project restructuring activities. The 39 active projects have a total cost of \$5.7 billion of which DOE has committed \$1.9 billion. At the end of FY 1999, 28 projects are expected to be completed. Five projects are expected to be in operation and six projects in design or construction. At the end of FY 1999, two projects are expected to have outstanding obligation commitments.

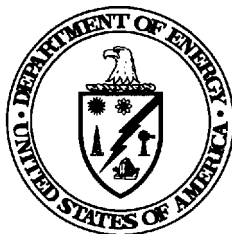
Highlights of Program Changes (\$ in millions)

Clean Coal (FY 1998 -\$101.0; FY 1999 -\$40.0) -\$61.0

Change reflects the amount proposed for deferral; FY 1999 (\$-40.0) versus the enacted FY 1998 rescission of (\$-101.0). The proposed deferral of funds reflects schedule delays, primarily resulting from project restructuring activities.

DEPARTMENT OF ENERGY

PERFORMANCE PLAN



SECRETARY OF ENERGY
FEDERICO PEÑA

FISCAL YEAR 1999

OVERVIEW

This Performance Plan for the Department of Energy is an overview of the details contained in the full budget submission for FY 1999 and expands on the Administration's performance plan for FY 1999. The Department of Energy is employing performance-based management techniques to be more productive and accountable to the taxpayers. The detailed budget justifications, contained in the full budget, reflect a management system that is becoming performance-based.

Fiscal Year 1999 is the second year for which the Department has prepared a performance plan. This year represents the first year that a performance plan is required by the Government Performance and Results Act of 1993 (GPRA). The FY 1999 plan was developed using our experience gained from :

- three years of developing and executing performance agreements between the Secretary of Energy and the President,
- three years of reporting to the public the results of implementing those agreements,
- preparing the performance plan for FY 1998, and
- developing the Strategic Plan published in September 1997.

GPRA calls for a performance plan to "establish performance goals to define the level of performance to be achieved by a program activity". Not only does the Performance Plan establish performance goals, it also presents the information in the "business line" format documented in the Department's Strategic Plan. Additionally, the performance plan has the same "look and feel" as the annual performance agreements between the Secretary of Energy and the President which have been Congressionally recognized as successful. Consistent organization and format of performance management information provides a natural cascade of management documents from the Strategic Plan to the annual performance plan, to the Secretary of Energy's Performance Agreement with the President, to the Department's annual report.

In summary, the budget and management of the operations at the Department of Energy are performance-based and follow the business line format outlined in the Department's Strategic Plan. This Performance Plan for FY 1999 identifies what the taxpayers will receive for the resources entrusted to the Department of Energy.

The Mission of the Department of Energy is:

To foster a secure and reliable energy system that is environmentally and economically sustainable, to be a responsible steward of the Nation's nuclear weapons, to clean up our own facilities, and to support continued United States leadership in science and technology.

To implement this mission, the resources requested for FY 1999 are:

\$18.0 Billion and 16,627 Full Time Equivalent staff.

INTRODUCTION

Producing a Clear Picture of Intended Performance

This Performance Plan provides a clear picture of the Department's intended performance by presenting the strategic or "general" goals and objectives for each of the Department's business lines including corporate management of the Department. For each objective, the Department has identified how progress toward the objective will be measured, and the achievement of objectives will mark progress toward the goals. These measures are both the performance measures (the units) and the performance goals (the amounts) that define expected program performance.

Links to the Strategic Plan and Budget

To ensure linkage of our strategic mission and goals to the budget and day-to-day activities, our Performance Plan has the same structure as our current Strategic Plan and has the identical mission statement, business lines, and strategic/general goals and objectives. Many of the measures contained in this Performance Plan are taken directly from the Strategic Plan. Because a strategic plan represents a longer performance horizon, it can be expected that the illustrative measures of the Strategic Plan will be modified, replaced, or expanded when included in each year's performance plan. In order to show the links between this Performance Plan and the Congressional budget structure, a matrix is provided with each business line and a Department-wide matrix is included as with this plan.

Cooperation and Efficiency

The Department conducts continual dialogue and cooperation with other Federal and State agencies, and Native American nations, as well as commercial industries and foreign governments. This cooperation frequently identifies common objectives between these organizations and the Department. In situations where our goals and objectives are accomplished through the work of others, we reduce or eliminate our efforts thus avoiding duplication and thereby saving taxpayer resources.

Achieving DOE Goals

As part of the process used to develop the Department's Strategic Plan, strategic goals were defined, including strategies to achieve those goals. The Department's mission was aligned into five business lines including a business line for corporate management functions. Each business line has a strategic or general goal, and each business line goal is supported by objectives. In turn, each objective is supported by strategies which describe how each objective will be accomplished.

Strategic/General Goals (one per business line)

 ✧ Objectives (3-7 per goal)

 ✧ Strategies (1-10 per objective)

 ✧ Measures: "performance measures" and "performance goals"

Consultation with Stakeholders

In the development of the Department's Strategic Plan, alternative strategies were considered. Through consultation with Congress, other agencies, and other stakeholder groups, many strategies were revised and improved, such that the published strategies were those most likely to succeed. Consistent with the natural cascading nature of the FY 1999 Performance Plan from the Strategic Plan, consultation with stakeholder groups has played an important role in defining the goals, objectives, and strategies for the Department. The projected available resources, financial, human, capital, and technological, were considered in developing the goals and objectives. The financial and human resources requested in the budget are identified in the Performance Plan with each goal.

Adjustments to the Strategic Plan

The Government Performance and Results Act of 1993 allows for adjustments to the current strategic plan through annual performance plans. Selected measures presented in the Strategic Plan are repeated herein. In concert with the requests contained in the FY 1999 budget, specific additional performance measures were developed or updated from the illustrative measures in the Strategic Plan. This Performance Plan contains the resultant measures. Each measure is annotated with the responsible DOE office in parentheses. A list of the office abbreviations is included at the back.

Department of Energy Performance Plan for FY 1999

To implement its important mission, DOE

developed a strategic plan documenting one goal for each of four major business lines and one goal for corporate management. Each goal is supported by objectives that are, in turn, supported by strategies. Illustrative measures that would indicate progress toward accomplishment of the strategies were also included in the Strategic Plan. While the goals and objectives chart a course for the next 5-10 years, the strategies are targeted for the next 3-5 years and this performance plan contains the performance measures and goals are for FY 1999. Additionally, it should be

noted that this performance plan is only an overview of the comprehensive set of performance measures and performance goals set forth in the Department's full performance-based budget. Finally, performance planning is still evolving at the Department of Energy. Each cycle the Department becomes more effective in designing and refining performance measures and goals that are used to manage operations at the Department of Energy.

The following table presents the business line goals and requested resources for FY 1999.

Business Line Goals	FY 1999 Budget Request	
	(in millions)	(in FTEs)
Energy Resources: The Department of Energy and its partners promote secure, competitive, and environmentally responsible energy systems that serve the needs of the public.	\$ 2,338	6,316
National Security: Support national security, promote international nuclear safety, and reduce the global danger from weapons of mass destruction.	\$ 6,091	2,526
Environmental Quality: Aggressively clean up the environmental legacy of nuclear weapons and civilian nuclear research and development programs, minimize future waste generation, safely manage nuclear materials, and permanently dispose of the Nation's radioactive wastes.	\$ 6,654	3,411
Science and Technology: Deliver the scientific understanding and technological innovations that are critical to the success of DOE's mission and the Nation's science base.	\$ 2,720	447
Corporate Management: The Department of Energy continuously demonstrates organizational excellence in its environment, safety and health practices, communication and trust efforts, and its corporate management systems and approaches. (All programs participate in the Corporate Management area. The funds and FTEs shown for Corporate Management are those of the Departmental Administration account.)	\$ 109	1,300

Department of Energy Performance Plan for FY 1999

ENERGY RESOURCES

GOAL: The Department of Energy and its partners promote secure, competitive, and environmentally responsible energy systems that serve the needs of the public.

*The following table indicates which budget program/decision units support which of the business line objectives. Resources, in both funds and Full Time Equivalent staff (FTEs), are shown. FTEs are often budgeted as a group for an office rather than distributed over the office's programs. They are shown in the program/decision unit where budgeted.

	Program/ Decision Unit	FY 1999 Budget Request (dollars in millions)*	FTEs*	ER-1 Energy Security	ER-2 Competitive Industry	ER-3 Efficiency & Productivity	ER-4 Global Markets	ER-5 Informed Policy
EE	Solar & Renewable Energy	\$389.3	102	X	X	X	X	X
	Transportation Sector	\$246.1	427	X		X	X	
	Industry Sector	\$166.6			X	X	X	
	Federal Energy Management Program	\$33.9			X	X		
	Bldg. Tech., State, & Comm. Sector	\$126.4			X	X	X	
	State & Local Partnership (grants)	\$191.1				X		
	Conservation Policy & Program Direction	\$44.4		X	X	X	X	X
EIA	Energy Information Administration.	\$70.5	353					X
FE	Fossil Energy Programs	\$383.4	683	X	X		X	X
	Clean Coal Tech.	\$-40.0	67	X	X		X	
	Naval Petroleum & Oil Reserves	\$22.5	62	X				
	Strategic Petroleum Reserves	\$160.1	135	X				
NE	Nuclear Energy	\$236.6	168		X			X
PMA	Alaska Power Administration	\$0.0	8	X				
	Bonneville Power Administration	\$258.0	2,755	X				
	Southeastern Power Administration	\$10.5	41	X				
	Southwestern Power Administration	\$26.0	186	X				
	Western Area Power Administration	\$223.6	1,329	X				
ER	Fusion Energy Sciences	\$228.2	49					X
NN	Emergency Management	\$23.7		X				

PLANNED PERFORMANCE

ER-1 Reduce the vulnerability of the U.S. economy to disruptions in energy supplies.

The Department will (1) support research and development, policies, and improved regulatory practices capable of ending the decline in domestic oil production before 2005; (2) maintain an effective Strategic Petroleum Reserve (SPR) to deter and respond to oil supply disruptions, and act cooperatively with member nations of the International Energy Agency; (3) diversify the international supply of oil and gas; (4) develop alternative transportation fuels and more efficient vehicles that can reduce year 2010 projected oil (crude plus refined products) imports of 12 million barrels per day by 10 percent; (5) maximize the productivity of Federal oil fields, consistent with Congressional legislation; and (6) take measures to avoid, but when needed, respond to domestic energy disruptions. (EE, FE, PO, EIA, PMAs, NN)

□ Performance Measures and Goals for FY 1999:

- *Initiating an additional four percent of the SPR infrastructure Life Extension Program, thereby bringing program implementation to approximately 97 percent of the \$320 million program. Program completion in FY 2000 will increase sustained drawdown capability to 4.2 million barrels per day compared to 3.7 in FY 1997. (FE)*
- *Demonstrating four advanced production enhancement technologies that could ultimately add 190 million barrels of domestic reserves, including 30 million barrels during FY 1999. (FE)*
- *Completing with States an online environmental compliance expert system that will improve oil and gas production economics by reducing time and costs for permitting and reporting. (FE)*
- *Continuing DOE participation in international energy initiatives (such as the Binational Commissions of Russia and Ukraine, the Caspian working group, Summit of the Americas, and Asia Pacific Economic Cooperation), that are instrumental in developing, through government-to-government efforts, an effective legal and*

regulatory framework for private sector energy investment. (PO)

- *Supporting an industrial partner to complete site preparation and begin construction of industry-owned facility to demonstrate first-of-a-kind cellulosic biomass to ethanol technology from agricultural crop waste. (EE)*
- *Building a single cylinder proof-of-concept diesel engine that delivers up to 55 percent efficiency. (EE)*
- *Completing negotiations with Chevron USA on equity shares of Elk Hills. (FE)*
- *Ensuring that each power system control area operated by a Power Marketing Administration (PMA) receives, for each month of the fiscal year, a Control Compliance Rating of "Pass" using the North America Reliability Council performance standard. (PMAs)*
- *Coordinating with Federal, State, and local governments and private energy companies to achieve prompt restoration of energy systems following major domestic energy emergencies. (NN)*

ER-2 Ensure that a competitive electricity generation industry is in place that can deliver adequate and affordable supplies with reduced environmental impact.

The Department will (1) propose legislation and support administrative actions to promote establishment of a more open, competitive electric system, with improved environmental performance; (2) support R&D policies and improved regulatory practices that can increase domestic natural gas supplies, moderate future price increases, and fuel 25 percent of the anticipated 6 trillion cubic feet (TCF) increase in natural gas demand (of which 3.5 TCF is for electricity generation) through 2010; (3) develop renewable energy technologies and supporting policies capable of doubling non-hydroelectric renewable energy generating capacity by 2010; (4) by 2010, significantly reduce emissions from currently existing fossil fuel powerplants; (5) by 2010, integrate advanced turbine and fuel cell technology to achieve market-ready gas-fueled powerplants with efficiencies over 70 percent and significantly reduced NOx compared to conventional plants; (6) by 2010, reduce coal powerplant emissions

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by achieving market-ready coal power systems with efficiencies over 60 percent (new plants are currently about 35 percent), emission reductions less than 1/10 of New Source Performance Standards (NSPS), and CO₂ emissions 45 percent below conventional plants'; (7) improve nuclear power plant reliability and availability to increase the capacity factor of existing nuclear power plants from the 1996 average of 76 percent to 85 percent by 2010; (8) maintain a viable nuclear option for future, carbon-free baseload electricity through cooperative programs with the U.S. electric utility industry, national laboratories, and universities that would maintain domestic nuclear capabilities and would result in a U.S. order of an advanced nuclear power plant before 2010 (See EQ-5 for nuclear waste issues); and (9) develop and introduce advanced turbines for cogeneration that can reduce annual industrial energy costs by \$500 million and carbon emissions by nearly 1.7 million metric tons in 2010.

(EE, FE, NE)

□ Performance Measures and Goals for FY 1999:

- *Demonstrating 4 advanced drilling and completion technology systems that could ultimately add 6 TCF of domestic gas reserves, including 1 TCF through FY 1999. (FE)*
- *Installing 20 manufacturing prototypes and 4 advanced prototype 25 KW dish/engine solar thermal systems at utility/field sites through the utility-scale Joint Venture Program. (EE)*
- *Completing two nationwide solar technology Super-ESPCs for use by all agencies. (EE)*
- *Supporting the Million Solar Roofs Initiative by installing 7,000 energy systems. (EE)*
- *Completing 5 commercial-scale demonstrations of the use of biofuels in powerplants by co-firing of coal with at least 5 percent biomass. (EE)*
- *Completing full-scale component testing of 2 advanced, utility-scale turbines with over 60 percent efficiency when used in combined cycles (new plants are currently about 55 percent) and with ultra-low NOx emissions. Initiate advanced gas turbine full speed, no load testing with 2 gas turbine manufacturers. (FE)*

- *Initiating the 8,000 hour test of the gas turbine engine for the Advanced Turbine System for use in industrial cogeneration. (EE)*
- *Completing testing of the first commercial-sized fuel cell module (100 KWe) using high temperature solid oxide technology suitable for advanced high-efficiency electrical generation cycles. (FE)*
- *Completing commercial demonstration of one integrated gasification combined cycle project (Wabash) and continuing operations of two other projects in order to establish the engineering foundation leading to new generation of 60 percent efficient, ultraclean, coal powerplants. (FE)*
- *Working with the laboratories, universities and industry to develop a cooperative R&D program to address problems that may prevent continued operation of current nuclear plants and fund the initiative at \$10 million a year, to be matched by industry. (NE)*
- *Establishing a peer-reviewed Nuclear Energy Research Initiative, initially funded at \$24 million a year, for investigator-initiated ideas to address the difficult issues of waste, safety, proliferation, and cost. (NE)*

ER-3 Reduce energy-related environmental impacts through more efficient energy use.

The Department will (1) develop and deploy vehicles, fuels, and systems of the future, contributing significantly to the Partnership for a New Generation of Vehicles to develop, by 2004, prototype mid-sized cars capable of 80 miles per gallon that will reduce NOx and CO₂ emissions by two-thirds compared to today's new car average without compromising safety, comfort, and cost; (2) by 2010, limit energy related releases of CO₂, SOx, NOx, particulates, and other wastes by as much as 5 percent relative to projected emissions by supporting R&D to improve efficiency of the Nation's energy intensive industries; and (3) by 2010, improve the energy efficiency of the existing U.S. building stock, and increase the energy efficiency of new homes by 30 percent and other new buildings by 20 percent compared to 1996 average new buildings. (EE)

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☐ Performance Measures and Goals for FY 1999:

- *Six of the major energy intensive industries completing roadmaps to achieve each industry vision and start implementing the R&D focused on the roadmaps to achieve up to 25 percent reduction of energy consumption by 2010. (EE)*
- *Expanding the Clean Cities program to create continuous corridors of alternative transportation fuel availability in and between 10 major urban centers. (EE)*
- *Expanding voluntary industry/government collaboration to reduce greenhouse gases by catalyzing a Climate Challenge forum with over 600 utility partners to exchange lessons learned on cost-effectively reducing greenhouse gases. (EE)*
- *Weatherize 78,000 bringing the total number of homes weatherized to 4.7 million. (EE)*
- *Working with the Federal Trade Commission to allow manufacturers to add the ENERGY STAR logo to the yellow and black FTC “Energy Guide” label for covered products and recruiting an additional 1,500 stores to label ENERGY STAR appliances nationwide. (EE)*
- *Recruiting 85 additional Rebuild America partnerships to exceed the original goal of 250 Rebuild Partners. New partners will begin action plans that will result in over 400 million square feet of floor space renovated, reducing annual energy costs by \$143 million and reducing CO₂ emissions by 0.345 million metric tons. (EE)*
- *Maintaining an industry cost-share level of over 40 percent, when averaged across all work with industry. (EE)*
- *Accumulating customer economic savings from past and current Energy Efficiency/Renewable Energy programs exceeding \$11 billion. (EE)*

ER-4 Support U.S. energy, environmental, and economic interests in global markets.

The Department will (1) develop policies, programs, and information to facilitate energy sector reductions in greenhouse gas emissions; and (2) cooperate with foreign governments and international institutions to develop open energy markets, and facilitate the adoption and export of clean, safe, and efficient energy technologies and energy services. **(EE, FE)**

☐ Performance Measures and Goals for FY 1999:

- *Increasing activities to remove barriers to U.S. companies in energy efficiency, renewables, oil and gas recovery and clean coal technology markets, in China, Indonesia, the Philippines, Brazil, India, South Africa, and the Newly Independent States, and in other developing economies. (FE)*

ER-5 Carry out information collection, analysis, and research that will facilitate development of informed positions on long-term energy supply and use alternatives.

The Department will (1) develop and expand public access to energy data, forecasts, analyses, and educational materials; and (2) carry out research and scenario analysis to help identify and understand options that could revolutionize 21st century energy markets. **(EIA, FE, ER)**

☐ Performance Measures and Goals for FY 1999:

- *The average number of unique monthly users of the Energy Resources Board Web Site growing by at least 20 percent per year, (from about 70,000 per month in 1997). (EIA)*
- *Initiating a coordinated, Department-wide program to develop lower-cost, environmentally acceptable technology approaches to carbon capture and sequestration. (FE)*
- *Transferring fiber-optic hydrogen leak detector technology to industry (related to the “hydrogen economy” concept). (EE)*

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- *Completing analysis of test data from wells in the McKenzie Delta and offshore Carolinas to help define the volume and production characteristics of Arctic and deep marine methane hydrates. (FE)*
- *Completing a conceptual design study of an innovative fusion power system and evaluate the next steps as guidance to science and technology research. (ER)*
- *Publishing domestic and international Annual Energy Outlooks forecasting energy supply and consumption through the year 2020. (EIA)*

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NATIONAL SECURITY

GOAL: Support national security, promote international nuclear safety, and reduce the global danger from weapons of mass destruction.

*The following table indicates which budget program/decision units support which of the business line objectives. Resources, in both funds and Full Time Equivalent staff (FTEs), are shown. FTEs are often budgeted as a group for an office rather than distributed over the office's programs. They are shown in the program/decision unit where budgeted.

	Program/ Decision Unit	FY 1999 Budget Request (dollars in millions)*	FTEs*	NS-1 Stockpile Confidence	NS-2 Science-Based Stewardship	NS-3 Enterprise Vitality	NS-4 Weapons Reductions	NS-5 Arms Control & Nonproliferation	NS-6 Nuclear Power Systems	NS-7 Nuclear Safety
DP	Weapons Stockpile Stewardship	\$2,188.4	1,878	X	X	X	X			
	Weapons Stockpile Management	\$2,051.1		X		X	X			
	Weapons Program Direction	\$260.5				X				
NN	Nonproliferation & Verification R&D	\$210.0	395			X	X	X		
	Arms Control	\$256.9				X	X	X		
	Intelligence	\$33.6				X	X	X		
	Nuclear Safeguards & Security	\$53.2				X		X		
	Security Investigations	\$30.0				X				
	Emergency Management	\$23.7				X				
	NN Program Direction	\$88.9				X	X	X		
MD	Fissile Materials Disposition	\$169.0	25			X	X			
NE	Nuclear Energy	\$236.6	168	X			X		X	X
	Uranium Programs	\$66.7					X			
	International Nuclear Safety	\$35.0								X
NR	Naval Reactors	\$665.5	204						X	
WT	Worker & Community Trans.	\$45.0	24							

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PLANNED PERFORMANCE

NS-1 Maintain confidence in the safety, reliability, and performance of the nuclear weapons stockpile without nuclear testing.

The Department will (1) extend the life of U.S. nuclear weapons by continuing the Stockpile Life Extension Program and Stockpile Maintenance activities; (2) improve detection and prediction capabilities for assessing nuclear weapon component performance and the effects of aging; (3) continually evaluate the safety, reliability, and performance of the nuclear weapons stockpile; and (4) provide a reliable source of tritium as required for the nuclear weapons stockpile by FY 2005 or FY 2007 depending on the production option selected. (DP, NE)

□ Performance Measures and Goals for FY 1999:

- *Certifying the nuclear weapons stockpile safety, reliability, and performance according to DOE/DoD procedures. (DP)*
- *Meeting all DoD annual weapons alteration, modification, and surveillance schedules. (DP)*
- *Beginning the implementation of the dual-path option decision to provide a reliable source of tritium as required for the nuclear weapons stockpile. (DP)*

NS-2 Replace nuclear testing with a science-based Stockpile Stewardship and Management Program.

The Department will (1) develop the advanced simulation, modeling and experimentation technologies necessary to confidently mitigate the loss of underground testing by FY 2004; (2) develop new nuclear weapons physics experimental test capabilities; and (3) advance our understanding of the fundamental characteristics of weapons behavior through systems engineering and advanced experiments and modeling to support future assessments of weapons safety, reliability, and performance. (DP)

□ Performance Measures and Goals for FY 1999:

- *Completing the installation of a 3-trillion operations per second computer systems. (DP)*

- *Conducting three or four subcritical experiments at the Nevada Test Site to provide valuable scientific information about the behavior of nuclear materials during the implosion phase of a nuclear weapon. (DP)*

NS-3 Ensure the vitality of DOE's national security enterprise.

The Department will (1) provide an appropriately-sized, cost-effective, safe, secure, and environmentally sound national security enterprise; (2) ensure that sufficient scientific and technical personnel are available to meet DOE's long-term national security requirements; (3) ensure and enhance protection of nuclear materials, sensitive information, and facilities; (4) provide DOE-related intelligence and threat assessment support to members of the national security community; and (5) maintain nuclear test readiness and enhance emergency management capabilities to address any nuclear weapons, radiological, or other emergency in the United States or abroad. (DP, NN, NE, MD)

□ Performance Measures and Goals for FY 1999:

- *Completing the shipment of plutonium pits from Rocky Flats to Pantex in FY 1999. (MD)*
- *Ensuring that the capability to resume underground testing is maintained in accordance with the Presidential Decision Directive and Safeguard C of the Comprehensive Test Ban Treaty through a combined experimental and test readiness program. (DP)*
- *Initiating needed material protection, control, and accountability upgrades at DOE facilities with weapons-usable material. (NN)*
- *Furthering the protection of all U.S. origin nuclear materials in the U.S. and abroad from possible theft, loss, or illicit trafficking. (NN)*
- *Developing information on nuclear materials contained in waste in a new Departmental database for all nuclear materials by the end of the first quarter FY 1999. (NN)*

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- *Establishing processes for the intelligence community to provide early warning of noncompliance with international treaties or attempted thefts and diversions of nuclear materials or nuclear warheads. (NN)*
- *Completing the planning to identify and preserve the personnel skills, equipment and infrastructure needed to conduct an underground nuclear test should the President deem it necessary. (NN)*
- *Demonstrating improvement of a comprehensive management system to ensure Departmental response to all DOE emergencies. (NN)*
- *Maintaining robust emergency response assets in accordance with Presidential Decision Directive 39, The Atomic Energy Act and Executive Order 12656 to ensure Departmental response to any nuclear weapons or radiological emergency in the United States or abroad. (DP)*

NS-4 Reduce nuclear weapons stockpiles and the proliferation threat caused by the possible diversion of nuclear materials.

The Department will (1) dismantle nuclear warheads that have been removed from the U.S. nuclear weapons stockpile in a safe and secure manner; and (2) reduce inventories of surplus weapons-usable fissile materials worldwide in a safe, secure, transparent, and irreversible manner. **(DP, NN, NE, MD)**

□ Performance Measures and Goals for FY 1999:

- *Adhering to schedules for the safe and secure dismantlement of approximately 500 nuclear warheads that have been removed from the U.S. nuclear weapons stockpile. (DP)*
- *In FY 1999, completing the final Environmental Impact Statement and issuing Record of Decision on siting plutonium disposition facilities. (MD)*
- *Placing over 20 metric tons of excess highly enriched uranium (HEU) under International Atomic Energy Agency (IAEA) safeguards in FY 1999. (NN)*
- *Initiating design and equipment procurement for a pilot-scale system in Russia to convert*

weapons plutonium to forms suitable for disposition and international inspection.(MD)

- *Initiating design for Pit Disassembly and Conversion and Mixed Oxide (MOX) Fuel Fabrication facilities. (MD)*
- *Monitoring the dilution of 30 metric tons of highly enriched uranium (HEU) to low enriched uranium (LEU) from dismantled Russian nuclear weapons for purchase by the United States Enrichment Corporation. (NE)*
- *Continuing transfer of U.S. surplus HEU to the United States Enrichment Corporation for dilution and subsequent sale. (MD)*
- *Evaluating the impacts of warhead dismantlement and transparency initiatives. (NN)*

NS-5 Continue leadership in policy support and technology development for international arms control and nonproliferation efforts.

The Department will (1) strengthen the nuclear nonproliferation regime through support of treaties and international agreements; (2) work with the states of the former Soviet Union and others to minimize the risks of proliferation; and (3) advance nonproliferation technology. **(NN)**

□ Performance Measures and Goals for FY 1999:

- *Supporting negotiations on the Fissile Materials Cut-Off Treaty. (NN)*
- *Improving and integrating technology practices, facilities, and training for material protection, control, and accountability worldwide through FY 1999. (NN)*
- *Fielding an initial joint DOE-Customs Service remote inspection system capable of identifying radiation signatures of potential nuclear smuggling packages. (NN)*
- *Developing improved technologies and systems for early detection, identification, and response to weapons of mass destruction proliferation and illicit materials trafficking. (NN)*

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- *Developing improved sensor systems for treaty monitoring and verification. (NN)*
- *Employing advanced technologies to provide verification confidence. (NN)*

NS-6 Meet national security requirements for naval nuclear propulsion and for other advanced nuclear power systems.

The Department will (1) provide the U.S. Navy with safe, militarily- effective nuclear propulsion plants and ensure their continued safe and reliable operation; and (2) meet ongoing and future national security requirements for special nuclear power systems.

(NE)

□ *Performance Measures and Goals for FY 1999:*

- *Developing new reactor plants, including the next generation reactor, which will be 85 percent complete by the end of FY 1999, and ensuring the safety, performance reliability, and service-life of operating reactors. (NE)*
- *Ensuring radiation exposures to workers or the public from Naval Reactor activities are within Federal limits and no significant findings result from environmental inspections by State and Federal regulators. (NE)*

NS-7 Improve international nuclear safety.

The Department will (1) assist countries in reducing the risks from Soviet-designed nuclear power plants and implement a self-sustaining nuclear safety improvement program capable of reaching internationally accepted safety practices; (2) promote nuclear safety culture improvements internationally by providing strong leadership in international nuclear safety organizations and centers; and (3) assist in the multi-national effort to shut down Chernobyl Units 1, 2, and 3 in Ukraine before January 2001 and reduce the risk of possible collapse of the Unit 4 sarcophagus.

(NE)

□ *Performance Measures and Goals for FY 1999:*

- *Completing the development and implementation of an effective reactor plant operator training program at key plants based*

on the Systematic Approach to Training methodology used in the United States and provide and incorporate plant simulators into the operator training programs. (NE)

- *Providing preliminary safety assessment results to determine near-term safety improvements. (NE)*
- *Providing, Safety Parameter Display Systems to improve operator response to emergencies. (NE)*
- *Promoting U.S. positions and practices in international forums that advocate safe reactor operations and effective response to radiological emergencies. (NE)*
- *Completing a comprehensive decommissioning engineering survey of Chernobyl Unit 1. (NE)*

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ENVIRONMENTAL QUALITY

GOAL: Aggressively clean up the environmental legacy of nuclear weapons and civilian nuclear research and development programs, minimize future waste generation, safely manage nuclear materials, and permanently dispose of the Nation's radioactive wastes.

*The following table indicates which budget program/decision units support which of the business line objectives. Resources, in both funds and Full Time Equivalent staff (FTEs), are shown. FTEs are often budgeted as a group for an office rather than distributed over the office's programs. They are shown in the program/decision unit where budgeted.

NOTE: The Department of Energy is committed to completing as much cleanup as possible by 2006 of the Nation's sites contaminated from nuclear weapons research, production, and testing. Achieving our accelerated site completion goals will require the Department to improve productivity and reduce the life-cycle costs of cleanup. The geographic site completion goals are based on the Environmental Management (EM) Program's most aggressive budget and planning scenarios and assume the maximum possible gains in efficiency. At some of these sites, these goals are extremely ambitious and represent challenges rather than specific commitments. The 2006 planning process and the FY 1999 Congressional Budget Request serves as the basis for the commitments in this Performance Plan.

Even after completing cleanup, the Department will maintain a presence at most sites to ensure that the reduction in risk to human health and the environment is maintained. Such "long-term stewardship" will include passive or active institutional controls and, often, treatment of groundwater over a long period of time.

	Program/ Decision Unit	FY 1999 Budget Request (dollars in millions)*	FTEs*	EQ-1 Most Serious Risks First	EQ-2 Clean up	EQ-3 DOE Disposal	EQ-4 Future Pollution	EQ-5 Waste Act Disposal	EQ-6 Reduce Cost	EQ-7 Land Reuse
EM	Civilian Site Closure Fund	\$254.3	2,869	X	X	X	X		X	X
	Civilian Site/Project Completion Fund	\$97.2		X	X	X	X			X
	Civilian Post 2006 Completion Fund	\$83.9		X		X	X			X
	Civilian Science & Technology	\$26.5				X	X		X	
	Uranium Enrichment D&D	\$277.0		X	X	X	X			
	Defense Site Closure Fund	\$1,006.2		X	X	X	X		X	X
	Defense Site/Project Completion Fund	\$1,047.3		X	X	X	X			X
	Defense Post 2006 Completion Fund	\$2,673.5				X	X			X
	Defense Science & Technology	\$193.0			X	X	X		X	
	EM Program Direction	\$346.2		X	X	X	X		X	X
	Privatization	\$516.9		X	X	X	X		X	X
EH	Environment, Safety & Health (non-defense)	\$76.0	309	X						
	Environment, Safety & Health (defense)	\$74.0	46	X						
RW	Nuclear Waste Disposal Fund	\$190.0	187			X		X		
	Defense Nuclear Waste Fund.	\$190.0				X		X		
NE	Nuclear Energy	\$236.6	168						X	
	Uranium Programs	\$66.7							X	
MD	Fissile Materials Disposition	\$169.0	25				X			
WT	Worker & Community Trans.	\$45.0	24							X

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PLANNED PERFORMANCE

EQ-1 Reduce the most serious risks from the environmental legacy of the U.S. nuclear weapons complex first.

The Department will identify and fund projects to reduce the most serious risks first and prevent further increases in relative risk at all sites. (EM, EH)

□ Performance Measures and Goals for FY 1999:

- *Prioritizing and funding high risk projects, such that risk to the workers, the public, and the environment decreases over time. (EM)*
- *Stabilizing and safely storing about 35 metric tons of heavy metal of spent nuclear fuel (SNF). Note: SNF data excludes information that is controlled or classified. (EM)*
- *Stabilizing and safely storing plutonium at Hanford Site. Performance goals to be determined at a later date. (EM)*

EQ-2 Clean up as many as possible of the Department's 52 remaining contaminated geographic sites by 2006.

The Department will clean up as many as possible of the Department's 52 remaining contaminated geographic sites by 2006¹. The Department will (1) accelerate and complete cleanup of 9 large geographic sites by 2006, including the Fernald Environmental Management Project, Mound Plant, Rocky Flats Environmental Technology Site, Portsmouth Gaseous Diffusion Plant, West Valley Site, Weldon Spring Site, Brookhaven National Laboratory, and Lawrence Livermore National Laboratory (Main Site and Site 300); (2) cleanup 34 of the remaining 36 smaller geographic sites by 2006, including the Uranium Mill Tailings Remedial Action (UMTRA) Project; and (3) accelerate cleanup at the remaining 7 large sites (Hanford, Savannah River, Idaho, Oak Ridge Reservation, Los Alamos National Laboratory, Nevada Test Site, and Paducah) where overall completion will not be achieved by 2006.

¹Fifty-two geographic sites remain to be cleaned up as of the end of FY 1997. As of the end of FY 1996, 83 remaining geographic sites required cleanup. In FY 1997, 10 geographic sites were completed. In addition, in FY 1998, the Formerly Utilized Sites Remedial Action Program (FUSRAP) (21 remaining sites) transferred to the Army Corps of Engineers.

Remediation progress will be measured by completion of release sites (i.e., discrete areas of contamination) and facilities (i.e., contaminated structures) that will ultimately lead to the completion of the entire geographic site. (EM)

□ Performance Measures and Goals for FY 1999:

- *Completing remediation at 3 geographic sites, increasing the total completed to 69 of 112 geographic sites in the EM program. (EM)*
- *Completing 456 release site assessments. (EM)*
- *Completing 235 release site cleanups. This will bring the number of completed release site cleanups to about 4,365 out of a total inventory of approximately 9,300 release sites. (EM)*
- *Completing 91 facility decommissioning assessments. (EM)*
- *Completing 101 facility decommissionings. This will bring the number of completed facility decommissionings to about 620 out of a total inventory of approximately 2,950 facilities. (EM)*

EQ-3 Safely and expeditiously dispose of waste generated by nuclear weapons and civilian nuclear research and development programs, and make defense high-level radioactive wastes disposal-ready.

The Department will (1) maximize timely shipments of transuranic waste to the Waste Isolation Pilot Plant (WIPP) subject to regulatory approval and (2) safely and expeditiously make disposal-ready and dispose of waste generated during past and current DOE activities. (EM, RW)

□ Performance Measures and Goals for FY 1999:

- *Shipping between 1,900 and 3,800 cubic meters of transuranic (TRU) waste to WIPP for disposal. The 3,800 cubic meters represents WIPP's available disposal capacity in FY 1999. (EM)*
- *Disposing of about 8,500 cubic meters of mixed low level waste (MLLW). (EM)*

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- *Disposing of about 66,000 cubic meters of low level waste (LLW). (EM)*
- *Producing 200 canisters of high level waste (HLW) at the Defense Waste Processing Facility at the Savannah River Site. (EM)*
- *Producing between 15 and 35 canisters of HLW at West Valley Demonstration Project. (EM)*

EQ-4 Prevent future pollution.

The Department will incorporate pollution prevention, including waste minimization, recycling and reuse of materials, into all DOE activities. **(EM, DP, NE, ER)**

☐ *Performance Measures and Goals for FY 1999:*

- *Reducing routine waste generation by 50 percent by the end of December 1999, based on 1993 waste generation rates. (EM)*
- *Reducing/avoiding the generation of radioactive, mixed, and hazardous wastes by 2,000 cubic meters. (Data for reporting available at end of calendar year 1999.) (EM)*
- *Reducing secondary waste generation from cleanup and stabilization activities by 10 percent annually, beginning in FY 1999. (EM)*

EQ-5 Dispose of high-level radioactive waste and spent nuclear fuel in accordance with the Nuclear Waste Policy Act as amended.

The Department will (1) complete the scientific and technical analyses of the Yucca Mountain site, and if it is determined to be suitable for a geologic repository, obtain a license from the Nuclear Regulatory Commission; and (2) maintain the capability to respond to potential statutory direction that may include transportation of spent nuclear fuel and high level waste to a designated interim storage facility.

(RW, MD)

☐ *Performance Measures and Goals for FY 1999:*

- *Publishing a draft Environmental Impact Statement in FY 1999. (RW)*
- *Completing repository and waste package designs for use in total system performance*

assessment for the repository license application. (RW)

- *Completing peer review of the total system performance assessment in FY 1999 to provide formal, independent evaluation and critique. (RW)*
- *Developing enhancements and modifications to the Standard Disposal Contract to support procurement of waste acceptance and transportation services. (RW)*

EQ-6 Reduce the life-cycle costs of environmental cleanup.

The Department will (1) significantly enhance performance, increase efficiency and reduce costs; (2) develop and deploy innovative environmental cleanup, nuclear waste, and spent fuel treatment technologies; and (3) reduce operating costs. **(EM, NE)**

☐ *Performance Measures and Goals for FY 1999:*

- *Achieving productivity enhancement targets (Targets to be established as part of the Accelerating Clean-up: Focus on 2006). (EM)*
- *Increasing the dollar value and/or number of competitively awarded fixed price contracts, including privatization contracts. (Targets to be established as part of the Accelerating Clean-up: Focus on 2006). (EM)*
- *Accomplishing 60 innovative technology deployments. (EM)*
- *Costs avoided through deployment of innovative technologies. (Targets to be established as part of the Accelerating Clean-up: Focus on 2006). (EM)*
- *Demonstrating 22 alternative technology systems that meet performance-specification based needs as identified by the Site Technology Coordination Groups. (EM)*
- *Making 40 alternative technology systems available for implementation with full costs and engineering performance data. (EM)*
- *Completing about 39 surplus nuclear facility deactivations. (EM)*

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- *Completing the demonstration of the electrometallurgical spent fuel treatment technology by June 1999 using Experimental Breeder Reactor-II spent nuclear fuel. (NE)*
- *Assuring the safety of the stored depleted uranium hexafluoride cylinders and maintaining the commitments to the Ohio Environmental Protection Agency and the Defense Nuclear Facilities Safety Board. (NE)*

EQ-7 Maximize the beneficial reuse of land and effectively control risks from residual contamination.

The Department will, in conjunction with stakeholders, develop comprehensive land use plans for DOE sites that provide information on alternative uses, ownership, environmental requirements, and implementation schedules. **(EM, FM, WT)**

□ *Performance Measures and Goals for FY 1999:*

- *Twenty percent of sites completing mission justification analysis for land and facilities. (FM)*
- *Initiating disposition of thirty percent of land and facilities identified as excess by the mission justification analysis. (FM)*

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SCIENCE AND TECHNOLOGY

GOAL: Deliver the scientific understanding and technological innovations that are critical to the success of DOE's mission and the Nation's science base.

*The following table indicates which budget program/decision units support which of the business line objectives. Resources, in both funds and Full Time Equivalent staff (FTEs), are shown. FTEs are often budgeted as a group for an office rather than distributed over the office's programs. They are shown in the program/decision unit where budgeted.

	Program/ Decision Unit	FY 1999 Budget Request (dollars in millions)*	FTEs*	ST-1 Long Term Science	ST-2 Leading-Edge Technologies	ST-3 Management of Science	ST-4 Science Education
ER	Fusion Energy Sciences	\$228.2	49	X	X	X	
	High Energy Physics	\$691.0		X	X	X	
	Nuclear Physics	\$332.6		X		X	
	Biological & Environmental Research	\$392.6		X	X	X	
	Basic Energy Sciences	\$836.1		X	X	X	
	Computational & Technology Research	\$160.6		X	X	X	
	University & Science Education	\$15.0		X	X		X
	Other Science Programs	\$62.1	288	X	X	X	X
	Technical Information Management	\$9.8	110		X		
EM	Civilian Science & Technology	\$26.5		X	X		X
	Defense Science & Technology	\$193.0		X	X		X
NE	Nuclear Energy	\$236.6	168		X		X
	Isotope Support Activities.	\$22.4			X		
DP	Weapons Stockpile Stewardship	\$2,188.4		X	X		X
NN	Nonproliferation & Verification R&D	\$210.0		X	X		
EE	Solar & Renewable Energy	\$389.3	102				X
	Transportation Sector	\$246.1					X
	Industry Sector	\$166.6					X
	Bldg. Tech., State, & Comm. Sector	\$126.4					X
	Conservation Policy & Program Direction	\$44.4	427				X
FE	Fossil Energy Programs	\$383.4	683				X

Department of Energy Performance Plan for FY 1999

PLANNED PERFORMANCE

ST-1 Develop the science that underlies DOE's long-term mission.

The Department will (1) conduct relevant, high quality, innovative research that responds to the needs of the DOE mission; (2) provide new insights into the fundamental nature of energy and matter; (3) search for and utilize the best talent from all sources to perform DOE research; (4) develop science to support DOE's participation in energy and other National policy formulations; (5) support emerging sciences that are important to the future of DOE and the Nation, including interdisciplinary research that addresses the Nation's most pressing problems; and (6) leverage research opportunities through science partnerships and pursue international science collaborations.

(ER, EM)

□ Performance Measures and Goals for FY 1999:

- *Completing sequencing of 40 million subunits of human DNA for submission to publicly accessible databases. (ER)*
- *Maintaining maximum operating schedules for all major scientific-user facilities (advanced scientific facilities made available to the general science community), including operations for applicable facilities at levels established by the Scientific Facility Initiative. (ER)*
- *Completing preparations and begin operation of the B-factory at the Stanford Linear Accelerator Center and the Tevatron at Fermilab (with the newly completed main injector). (ER)*
- *Completing construction and begin operation of the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory. (ER)*
- *Delivering on the 1999 US/DOE commitments to the international Large Hadron Collider project. (ER)*
- *Biological and Environmental Research being 70 percent complete in the genetic sequence of more than 10 additional microbes with significant potential for waste cleanup and energy production. (ER)*

- *Initiating a new joint Biological and Environmental Research-Basic Energy Sciences program in fundamental science that will underpin new opportunities and technologies in carbon capture. (ER)*
- *Discovering new biological structures with more than 60 percent of the new biological structures published in the peer reviewed literature resulting from data generated as part of the structural biology synchrotron user station program. (ER)*
- *Conducting five intensive operations periods at the Atmospheric Radiation Measurement (ARM) Southern Great Plains site and redeploy an atmospheric radiation and cloud station from the Arctic Ocean to Atkasuk, Alaska. (ER)*
- *Providing advanced simulations of possible climate response to increasing atmospheric concentrations of greenhouse gases at subcontinental spatial scales. (ER)*

ST-2 Deliver leading-edge technologies that are critical to the DOE mission and the Nation.

The Department will (1) develop the technologies required to meet DOE's energy, national security, and environmental quality goals; and (2) pursue technology research partnerships with industry, academia and other government agencies and proactively accelerate the transition of technologies to end users.

(ER, EM, NE, PO, DP, NN, EE, FE)

□ Performance Measures and Goals for FY 1999:

- *Expanding the use of risk assessments, cost-benefit analysis, and other tools in setting technology R&D priorities. (PO)*
- *Providing fundamental research in environmental sciences, biology, molecular sciences, and computational modeling that will underpin the cleanup of contaminated sites. (ER)*
- *Developing the Advanced Computational Testing and Simulation Toolkit so that simulation can be used in place of experiments which are too dangerous, expensive, inaccessible, or politically unacceptable. (ER)*

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- *Completing the initial ER/EM Pilot Collaborative Research Program and, in cooperation with EM, initiating development of the most promising cleanup technologies arising from these projects. (ER)*
- *Supplying quality stable and radioactive isotopes for industrial, research, and medical applications that continue to meet customer specifications and maintain 95 percent on-time deliveries. (NE)*
- *Initiating construction and commissioning of the Los Alamos Target Irradiation Station, improving isotope quality with greater operating efficiency. (NE)*

ST-3 Improve the management of DOE's research enterprise to enhance the delivery of leading-edge science and technology at reduced costs.

The Department will (1) manage the National Laboratories, science-user facilities, and other DOE research providers and research facilities in a more integrated, responsive, and cost-effective way, building on unique core strengths and corresponding roles; (2) design, construct, and operate research facilities in a timely and cost-effective manner; (3) improve the management, dissemination, sharing, and use of scientific and technical information across DOE; and (4) improve peer and program review processes. (ER)

☐ *Performance Measures and Goals for FY 1999:*

- *Completing preparations for the start of construction for the National Spallation Neutron Source. (ER)*
- *Completing prototype development of a "virtual laboratory" approach and implementing at least three program trial applications. (ER)*
- *Developing and implementing tools to facilitate access to DOE's scientific and technical information via electronic means, including searching across distributed collections and automatic information delivery targeted to specific customer needs. (ER)*

- *Surveys of users indicating at least 75 percent are satisfied or very satisfied with computer facilities and networks. (ER)*
- *Initiating change-out of the beryllium reflector at the High Flux Isotope Reactor at Oak Ridge National Laboratory to continue normal operations, and also initiate improvements to beam tubes and monochromators to significantly increase the thermal neutron flux to the instruments. (ER)*
- *Conducting, with at least 50 patients, Boron Neutron Capture Therapy (BNCT) Research Phase I/II clinical trials at reactor sources with neutrons, and initiating a feasibility study of accelerator-based BNCT. (ER)*
- *Completing commissioning of the Main Injector and bring the Tevatron into operation for physics with the new Main Injector. (ER)*
- *Maintaining high scientific quality in the Energy Research Program as judged by the program advisory committees. (ER)*

ST-4 Use DOE assets as part of an Administration-wide effort to advance the Nation's science education and literacy.

The Department will (1) develop and promote technologies and programs that deliver information and contribute to learning in science, math, engineering and technology, and in general, expand access to DOE's technical information; and (2) leverage DOE's human and physical research infrastructure, working with the National Science Foundation and other Federal agencies, to promote science awareness, enable advanced educational research opportunities, build capabilities at educational institutions, and improve educational opportunities for diverse groups.

(ER, EM, NE, DP, EE, FE)

☐ *Performance Measures and Goals for FY 1999:*

- *Establishing mechanisms to provide web-based access to energy-related scientific and technical information obtained by DOE via multilateral international partnerships. (ER)*

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- *Establishing customer feedback mechanisms to assess effectiveness of DOE's Scientific and Technical Information Program and related products and services in 1999. (ER)*
- *Continuing to make 2 to 10 appointments each in the Biological and Environmental Research program's Alexander Hollander Distinguished Post Doctoral Fellowship; the multi-agency SOARS Program (Significant Opportunities in Atmospheric Research and Science) for outstanding Hispanic, Native American, and African American students in the atmospheric and related sciences; and the minority colleges and university faculty and student research program. (ER)*
- *Initiating a Significant Opportunities program in the broader sciences of global change for outstanding undergraduate and graduate students. (ER)*

CORPORATE MANAGEMENT

GOAL: The Department of Energy will strive to demonstrate organizational excellence in its environment, safety and health practices, in its communication and trust efforts, and in its corporate management systems and approaches.

All Departmental programs participate in the Corporate Management area. Therefore, no table is provided.

PLANNED PERFORMANCE

CM-1 **Ensure the safety and health of the DOE workforce and members of the public, and the protection of the environment in all Departmental activities.**

The Department will (1) integrate and embed sound environment, safety, and health (ES&H) management practices into the performance of DOE's day-to-day work; (2) clearly identify and fund ES&H priorities and ensure resources are appropriately spent on those priorities; (3) ensure that all DOE employees are appropriately trained and technically competent commensurate with their ES&H responsibilities; and (4) work with the Nuclear Regulatory Commission and the Occupational Safety and Health Administration to evaluate the costs and benefits of independent external regulation of safety and health. (EH, ED, HR)

□ Performance Measures and Goals for FY 1999:

- Preventing fatalities, serious accidents, and environmental releases at Departmental sites. (EH)
- Implementing Integrated Safety Management Systems at DOE's 10 priority sites and in all major management and operations contracts. (EH)
- Providing expanded access to information on health related risks from operating our facilities to ensure that minority and low-income populations, which may be disproportionately adversely impacted by DOE facilities, understand the Department's environmental justice goals and strategies. (ED/EH)

- Conducting oversight special reviews, assessments, evaluations, and inspections of such topics as emergency management, safety management, accidents, and safeguards and security. (EH)

CM-2 **As a good neighbor and public partner, continually work with customers and stakeholders in an open, frank, and constructive manner.**

The Department will (1) foster strong partnerships with neighboring DOE communities, regulators, and other stakeholders to determine priorities and solutions; (2) increase customer and public awareness of DOE's mission areas by improving the quality, timeliness, frequency, and sufficiency of information disseminated on the Department's functions, successes, lessons learned, and future activities; and (3) increase openness with the public by prudently declassifying information about the Department's activities while maintaining a balance with the Nation's security.

(HR, NN, ED, FM)

□ Performance Measures and Goals for FY 1999:

- Reducing the Freedom of Information Act backlog by 15 percent and the average case age by 25 percent. (HR)
- Improving the quality and volume of information the DOE's World Wide Web site and demonstrating user-interest through by s higher numbers of home page visits hits per year. (HR)
- Reviewing 2,820,000 pages of DOE documents for possible declassification and release those that no longer need to be withheld for security purposes. This will bring the cumulative total to 11,280,000 pages reviewed which is 80 percent of DOE's historically significant records 25 years and older. (NN)
- Implementing over 70 interagency coordinated declassification actions based on the recommendations of the Fundamental Classification Policy Review. (NN)

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- *Implementing 10 CFR 1045 through reviewing 25 percent of other agency classification guides as well as reducing and improving 50 percent of DOE's own classification guides. (NN)*
- *Promoting community development through facilitating partnerships between minority educational institutions and minority businesses. (ED)*

CM-3 Use efficient and effective corporate management systems and approaches to guide decision making, streamline and improve operations, align resources and reduce costs, improve the delivery of products and services, and evaluate performance.

The Department will (1) improve decision-making, ensure accountability, maximize departmental resources, and achieve intended results by corporately managing the Department's mission, functions, and activities; (2) use prudent contracting and business management approaches that emphasize results, accountability, and competition; improve timeliness; minimize costs; and ensure customer satisfaction; (3) continue to streamline and improve operations, further reduce overhead expenditures, and facilitate additional workforce reductions while aiding affected employees and communities; (4) implement quality management principles, value diversity, and continue to improve human resources systems and practices; (5) strengthen the management of projects, materials, facilities, land, infrastructure, and other assets, to ensure safe, sound, and cost-effective operations, appropriate maintenance of sites, and to ensure intended project results; and (6) utilize, under the auspices of the Chief Information Officer, an integrated Department-wide framework for planning, budgeting, evaluating, and implementing information management requirements to reduce costs and improve operations.

(CR, PO, HR, FM, WT, ED)

☐ *Performance Measures and Goals for FY 1999:*

- *Developing annual performance-based budgets by using DOE's corporate Strategic Management System to link resource requirements to five-year plans, make independent project validations, and perform cross-cutting program evaluations. (PO)*
- *Preparing and publishing an annual performance report that includes financial statements by March 1999 as required by the Chief Financial Officers Act of 1990 and the Government Management Reform Act of 1994, the Department of Energy Organization Act of 1997, and related central agency guidance. (CR/PO)*
- *Fulfilling our commitment to Congress and CFO Council initiatives by developing an Executive Information System to support decision making thereby making business information available to executives and senior managers. (CR)*
- *Submitting a 1999 Status Report and Five Year Plan in September 1999 to the Office of Management and Budget which achieves legislative mandates and administrative provisions by planning for improved financial management at the Department. (CR/PO)*
- *Realizing annual Strategic Alignment Initiative savings commitments totaling \$1.7 billion by the end of FY 2000: (HR)*
 - *Consolidating Headquarters personnel into five locations by the end of FY 1999 and achieving \$5 million savings in rent.*
 - *Reducing the number of buildings from 16 to 4 by the year 2000. (HR)*
 - *Saving \$65 million by reengineering information management business processes yielding customer service improvements. (HR)*
 - *Reducing technical and support service contracting obligations below \$610 million in FY 1999. (HR)*
 - *Implementing staffing reductions to achieve Departmental Strategic Alignment Initiative target of 10,613 by the end of FY 1999. (HR)*
 - *Returning to the Treasury at least \$15 million annually through the sale, transfer, re-use, or disposal of unneeded materials, facilities, land, and other assets. (WT)*
- *Keeping involuntary separations to a range of 30-60 percent of all separations while assuring maintenance of essential work force skills mix and productivity. (WT)*

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- *Achieving annual recurring costs savings from separated workers that is at least three times the one time cost of separation. (WT)*
- *Supporting local community transition activities that will create 10,000 to 15,000 new private sector jobs by the end of FY 1999. (WT)*
- *Implementing a DOE-wide employee accessible automated personnel system by December 1998. (HR)*
- *Continuing hiring welfare to work recipients to achieve the Presidential goal of 55. (HR)*
- *Expanding the use of Alternate Dispute Resolution by 30 percent over FY 1998's use to mediate workplace disputes such as Equal Employment Opportunity complaints and grievances. (GC)*
- *Strengthening the management of the Department's facilities, projects, and infrastructure to ensure cost effectiveness, safe and environmentally sound operations, the successful completion of new projects, and appropriate site maintenance throughout life cycle asset management techniques. (FM)*
- *Completing four Energy Systems Acquisitions Advisory Board critical actions on required strategic and major systems. (FM)*
- *Continuing to improve infrastructure to allow staff the capability of accessing and sharing information easily and seamlessly across the DOE complex. (HR)*
- *Continuously evolving the Department-wide information architecture with supporting standards to foster \$100 million on cost avoidances by FY 2003. (HR)*
- *Department elements validating Year 2000 century date change compliant mission-essential computer systems in accordance with the milestones, guidance, and procedures established by the Chief Information Officer. (HR)*
- *Converting all management and operating contracts awarded in FY 1999 to performance-based management contracts. (HR)*
- *Awarding 50 percent of all management and operating contracts in FY 1999 by competitive procedures. (HR)*
- *Awarding 50 percent of all support service contracts awarded in FY 1999 as performance-based service contracts. (HR)*
- *Using the Malcolm Baldrige, President's or Energy Quality Award Criteria, demonstrate continuous organizational improvement by achieving positive trends in organizational scores. (HR)*
- *Having every Energy Efficiency/Renewable Energy program developing progress milestones and estimates of energy-related program benefits annually and at least 25 percent of the milestones and estimated benefits undergoing external peer review each year with a goal of having all milestones and estimated benefits being peer-reviewed at least once every four years. (EE)*

Resource Requirements

The Department will only achieve its goals and objectives with adequate financial, human, infrastructure, and technical resources.

In developing this plan, the Department projected budget appropriations consistent with the OMB's guidance for budget deficit reduction targets through FY 2002. Federal staffing levels are based upon the Department's Strategic Alignment Initiative targets (targets that do not include the Federal Energy Regulatory Commission and the Power Marketing Administrations) established in 1995. These targets call for an overall federal staff reduction of 27 percent by the end of FY 2000 to a level of 10,269. In addition, DOE will reduce contractor staffing levels to 91,000, a 38 percent reduction from the peak level of 148,686 employed in FY 1992. Additional decreases in budget or staffing levels will adversely impact the Department's ability to meet its commitments. A matrix was presented with each business line displaying the program/decision units that support the business line objectives. Attached is the composite matrix for all business lines showing those programs that support objectives in more than one business line. Additional resource requirements and special programmatic needs are described below.

In the National Security area, replacing nuclear testing with a science-based stewardship and management program will require development of advanced experimental and computational capabilities. Additionally, workforce skills will shift from nuclear weapons design, testing, and analysis to modeling, simulations, and systems analysis. The loss of nuclear expertise through staff aging and attrition will need to be minimized. Construction of the National Ignition Facility and the Dual-Axis Radiographic Hydrodynamic Test Facility will provide new experimental test capabilities. Additionally, a source for tritium will be needed to provide an adequate supply for the enduring nuclear weapon stockpile. New facilities will be required to disassemble and convert surplus plutonium pits and fabricate mixed oxide fuel for burning in existing commercial reactors. Existing or planned high level waste vitrification facilities, coupled with new material preparation facilities, will be required to immobilize surplus weapons plutonium. Modifications to existing or planned facilities will be utilized for the long-term storage of surplus fissile materials.

The Environmental Quality cleanup goals and objectives reflect the pressing need to reduce spending in the short

term, while reducing both economic and environmental liabilities in the long term. Achievement of the accelerated environmental cleanup goals and objectives is dependent upon receiving stable funding at about the current funding level. In addition, accomplishment of these goals and objectives depends upon effective implementation of a wide array of management initiatives designed to substantially reduce life-cycle costs, improve processes, and enhance performance. These initiatives include reducing support costs, creating the right incentives through performance-based contracting, optimizing project sequencing to reduce fixed costs, privatization and use of private-sector technology and experience, deployment of innovative technology, and benchmarking for process improvement. With regard to civilian radioactive waste, if legislation authorizing interim storage is enacted, substantial additional funding will be required for site-specific construction and procurement of waste acceptance and transportation equipment and services.

In order to meet the Nation's needs for cutting-edge science, DOE will have to periodically replace or make major upgrades to aging or outdated major experimental facilities. These needs will be weighed against the benefits from cost-effective modifications to existing facilities to ensure that the maximum national benefits are derived from existing infrastructure—this recognizes, however, that many of these science facilities have a finite useful life. The Secretary of Energy's Advisory Board has been asked to examine the long-term needs for advanced scientific research facilities to accomplish DOE's Science and Technology objectives.

Validation and Verification

Validation and verification of the reported status will be accomplished by guidance to the staff making reports, certifications by heads of organizational elements, training on reporting and documentation expectations, and by reviews of records. The data sources are within the program offices performing the work. The performance reporting process will include internal correspondence issued to heads of Departmental elements requesting the status of performance commitments in the Secretary's performance agreement and emphasizing the importance of ensuring that the information provided was accurate and complete.

In preparing audited financial statements, the Chief Financial Officer and Policy Office will issue correspondence, guidance and training to Secretarial Officers and their staffs, stressing their roles in the

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preparation of the financial statements and required management representation letters that attest to the accuracy and reliability of financial information and performance results. As requested by the Secretary, management representation letters will be signed and provided by all heads of Departmental elements responsible for performance commitments in the agreement to the Secretary and included the following attestation on performance measure information. "We acknowledge our responsibility for the fair presentation of the performance measure information presented in the Overview section and the Supplemental Information of the financial statements. We believe this data to be accurate and reliable." This attestation will indicate that each program office is aware of their responsibility for the performance measure data and the necessary validation and support documentation to ensure its accuracy and reliability. The Department will issue guidance and offer training to program offices to clearly delineate their specific roles and responsibilities in the preparation of the financial statements and related program performance reporting in order to ensure that the performance measure reporting structure is sufficient to capture reliable data for future financial statements. The Department will also conduct internal reviews of reported status to assure itself of the validity and veracity of the reported status of the performance measures.

The Department will only use the Inspector General's audit of the financial statements which provides an independent confirmation on the accuracy of the performance measure information in the financial statements, as a second check on the accuracy and reliability of the reported status.

Waivers

The Department has no requests to the Office of Management and Budget for waivers of administrative requirements to provide managerial flexibility.

Next Steps for this Plan

This Performance Plan is a proposal associated with the proposed budget for the Department. Although not required under GPRA, but allowed by OMB, the Department intends to convert this proposal into a performance agreement once the budget for the Department for FY 1999 is signed into law. The Department has developed performance agreements after the budget was enacted since FY 1995. The performance agreement for FY 1999 will resolve differences between the proposed budget and

performance plan and the final approved budget. The performance agreement will contain the proposed performance goals of the Performance Plan for those activities that are fully funded and will appropriately adjust those performance goals that are funded at a level different from the proposed budget.

The Department intends to report to the public quarterly on the status of performance as it has with previous performance agreements. Additionally, the Department will report to the Congress annually as required by GPRA, Government Management Reform Act (GMRA), and the DOE Organizational Act.

Demonstrating Credible Performance

This Performance Plan builds on the experience the Department has gained in collecting and reporting performance data each year since our first Performance Agreement between the Secretary and the President in FY 1995. Since then, we have been collecting performance results data for Secretarial performance measures of success and making them available to our stakeholders. In fact, we demonstrated to the National Performance Review that we were actively tracking our progress on the first agreement before it was even signed. The performance data for FY 1997 is available on our Web site (<http://www.doe.gov>).

In addition, beginning in FY 1996, our results have been subject to independent review by the Department's Inspector General. In the spirit of the recent management reform laws, Government Management Reform Act of 1994, as well as the Government Performance and Results Act of 1993, we began using the results data from the performance measures of the Agreements as the basis of the results reviewed for the financial statements. The first year the Department produced consolidated annual financial reports, FY 1996, which included results of performance compared to performance measures from the Performance Agreement, the IG was able to provide an a unqualified opinion. However, we recognize that our data collection and validation efforts can be improved and intend to make improvements for FY 1999 as we continue to ***make government work better and cost less.***

APPENDIX A Office Designations

The business line objectives and performance measures and goals are annotated with the responsible DOE office(s) in parentheses. The two letter office designations are listed below.

CR	Chief Financial Officer
DP	Defense Programs
ED	Economic Impact & Diversity
EE	Energy Efficiency & Renewable Energy
EH	Environment, Safety & Health
EIA	Energy Information Administration
EM	Environmental Management
ER	Energy Research
FE	Fossil Energy
FM	Field Management
HR	Human Resources and Administration
MD	Fissile Materials Disposition
NE	Nuclear Energy
NN	Nonproliferation & National Security
NR	Naval Reactors
PO	Policy and International Affairs
PMA s	Power Marketing Administrations
RW	Civilian Radioactive Waste Management
WT	Worker & Community Transition

APPENDIX B OBJECTIVES & BUDGET MATRIX

The following table is a composite of the tables presented with each business line. This table indicates which budgeted program/decision units support which of the business line objectives. Resources, in both funds and Full Time Equivalent staff (FTEs), are shown. FTEs are often budgeted as a group for an office and not distributed over the programs. They are shown where budgeted.

Program/ Decision Unit		FY 1999 Budget Request * (dollars in millions)	FTE's	Energy Resources	ER-1 Energy Security	ER-2 Competitive Industry	ER-3 Efficiency & Productivity	ER-4 Global Markets	ER-5 Informed Policy	National Security	NS-1 Stockpile Confidence	NS-2 Science-Based Stewardship	NS-3 Enterprise Vitality	NS-4 Weapons Reductions	NS-5 Arms Control & Nonproliferation	NS-6 Nuclear Power Systems	NS-7 Nuclear Safety	Environmental Quality	EQ-1 Most Serious Risks First	EQ-2 Clean up	EQ-3 DOE Disposal	EQ-4 Future Pollution	EQ-5 Waste Act Disposal	EQ-6 Reduce Costs	EQ-7 Land Reuse	Science & Technology	ST-1 Long Term Science	ST-2 Leading-Edge Technologies	ST-3 Management of Science	ST-4 Science Education
EE	Solar & Renewable Energy	\$389.3	102	X	X	X	X	X	X																					
	Transportation Sector	\$246.1		X		X	X	X																						
	Industry Sector	\$166.6			X	X	X																							
	Federal Energy Management Program	\$33.9			X	X																								
	Bldg., Tech., State & Community Sector	\$126.4			X	X	X																							
	State & Local Partnership (grants)	\$191.1			X																									
	Conservation Policy & Program Direction	\$44.4	427	X	X	X	X	X																						
EIA	Energy Information Administration	\$70.5	353						X																					
FE	Fossil Energy Programs	\$383.4	683	X	X		X	X																						
	Clean Coal Technology	-\$40.0	67	X	X		X																							
	Naval Petroleum & Oil Reserves	\$22.5	62	X																										
	Elk Hills School Lands Fund	\$36.0																												
	Strategic Petroleum Reserves	\$160.1	135	X																										
NE	Nuclear Energy	\$236.6	168		X		X		X		X		X		X	X								X			X		X	
	Isotope Support Activities	\$22.4																									X			
	Uranium Programs	\$66.7												X										X						
PMA	Alaska Power Administration	\$0.0	8	X																										
	Bonneville Power Administration	\$258.0	2,755	X																										
	Southeastern Power Administration	\$10.5	41	X																										
	Southwestern Power Administration	\$26.0	186	X																										
	Western Area Power Administration	\$223.6	1,329	X																										
EH	Environment, Safety & Health (non-defense)	\$76.0	309															X												
	Environment, Safety & Health (defense)	\$74.0	46															X												
RW	Nuclear Waste Disposal Fund	\$190.0	187																		X		X							
	Defense Nuclear Waste Fund	\$190.0																			X		X							
EM	Civilian Site Closure Fund	\$254.3																	X	X	X	X		X	X					
	Civilian Site/Project Completion Fund	\$97.2																	X	X	X	X		X						
	Civilian Post 2006 Completion Fund	\$83.9																	X	X	X		X							
	Civilian Science & Technology	\$26.5																		X	X		X			X	X	X		
	Uranium Enrichment D&D	\$277.0																	X	X	X	X		X						
	Defense Site Closure Fund	\$1,006.2																	X	X	X	X		X						
	Defense Site/Project Completion Fund	\$1,047.3																	X	X	X	X		X						
	Defense Post 2006 Completion Fund	\$2,673.5																		X	X		X							
	Defense Science & Technology	\$193.0																		X	X	X		X		X	X	X		
	EM Program Direction	\$346.2	2,869																X	X	X	X		X	X	X	X	X		
	Privatization	\$516.9																	X	X	X	X		X	X					
ER	Fusion Energy Sciences	\$228.2	49					X																			X	X	X	X
	High Energy Physics	\$691.0																									X	X	X	X
	Nuclear Physics	\$332.6																									X	X	X	X
	Biological & Environmental Research	\$392.6																									X	X	X	X
	Basic Energy Sciences	\$836.1																									X	X	X	X
	Computational & Technology Research	\$160.6																									X	X	X	X
	University & Science Education	\$15.0																									X	X	X	X
	Other Science Programs	\$62.1	288																								X	X	X	X
	Technical Information Management	\$9.8	110																								X			
DP	Weapons Stockpile Stewardship	\$2,188.4								X	X	X	X														X	X	X	
	Weapons Stockpile Management	\$2,051.1								X		X	X																	
	Weapons Program Direction	\$260.5	1,878									X																		
NN	Nonproliferation & Verification R&D	\$210.0										X	X	X													X	X		
	Arms Control	\$256.9										X	X	X																
	Intelligence	\$33.6										X	X	X																
	Nuclear Safeguards & Security	\$53.2										X		X																
	Security Investigations	\$30.0										X																		
	Emergency Management	\$23.7		X								X																		
	NN Program Direction	\$88.9	395									X	X	X																
MD	Fissile Materials Disposition	\$169.0	25									X	X										X							
NR	Naval Reactors	\$665.5	204													X														
NE	International Nuclear Safety	\$35.0														X														
WT	Worker & Community Transition	\$45.0	24																						X					

* The funding levels represent total obligational authority by programs.